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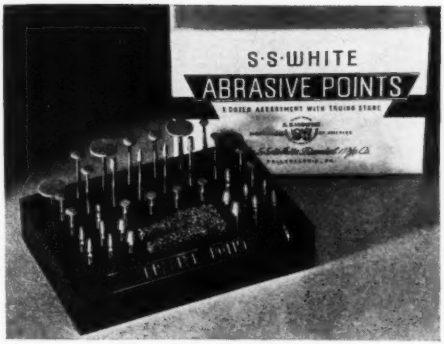

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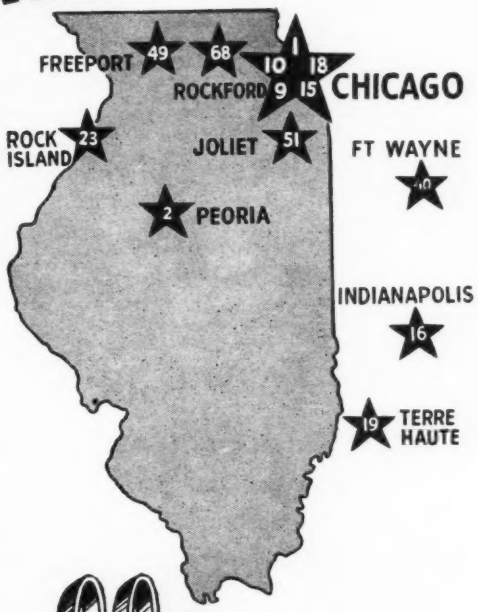

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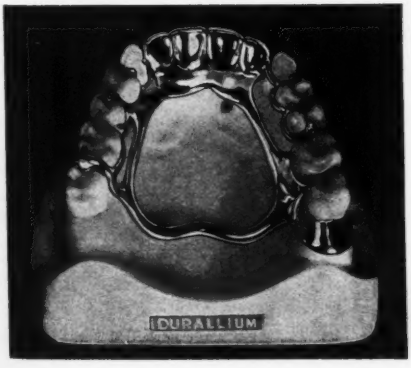

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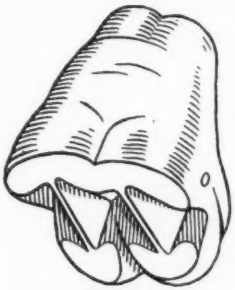

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VOLUME 8 February, 1939 NUMBER 2

JAMES EDWARD MAHONEY
CHAIRMAN, MEMBERSHIP COMMITTEE

THE PHYSICAL PRINCIPLES UNDERLYING PERIDENTAL TRAUMA*

By GEORGE H. MAXWELL, D.D.S.

MY ASSIGNMENT on this symposium is a discussion of the physical principles underlying trauma. Trauma is defined as an injury due to an intolerable force. Physical principles are pure abstractions formulated by man through scientific study of idealized concepts. Thus, mechanical principles such as those associated with the lever are abstract realities associated with the motion in time and space of a configuration of points.

Living things, in whole, as represented by the human body, or in part, as represented by the masticating mechanism or any of its component parts down to the highly differentiated and specialized cell, are simply physiochemical machines of extraordinary complexity, amenable to and activated by physical laws. I think we will all agree, if for no reason other than what the preceding essayists on this symposium have already told us, that the masticating mechanism, structurally and functionally, is a complexity. The scientific approach, where complexity presents, consists in dismembering the complexity into its simpler elements, followed by a careful analysis of the various factors and their relationship to the observed phenomenon. The observed phenomenon, as stipulated by the title of my assignment, is trauma—injury due to an intolerable force. Common observation clearly indicates that the ability of living things to tolerate force is largely dependent upon the magnitude or intensity of the force.

In accordance with a program of reducing a complexity into its simpler elements, I will introduce a series of schematic drawings, which, taken as a whole, constitute a simplified interpretation of two specific applications of the same physical principles which result in forces, the magnitude of one being beyond the limits of healthy tolerance while that of the other is within the limits of natural adaptive physiologic processes. It should be perfectly apparent by what I have already said that my discussion is based upon the assumption that peridental trauma is an accepted fact.

As a basis for this method of presentation, I offer the following premise: that masticatory force arises out of the contractile quality of muscular tissue; that this force is applied as a pull to a lever, the mandible; that the mandible, with its denture, moves during function; that this motion ceases momentarily when centric relationship obtains; and that individual tooth units move during functional contact with opponents.

In conjunction with this simple premise I introduce an accepted premise of the physicist which stipulates that when an object is set in motion by the application of a force, the object continues to move indefinitely in the direction of the force until forces equal and opposite become operative.

In this discussion the terms effort, push, pull, stress and force will be used synonymously.

Our conception of masticatory force is generally associated with its origin, that is, the contractile quality of mus-

*Presented before the Odontographic Society of Chicago, December 13, 1937, as the fifth paper in the symposium on "Occlusion."

cular tissue, and the motion of the mandible with the resultant occlusal stress. We are well acquainted with the intensity or magnitude of occlusal stress through the mechanical registrations of the gnathodynometer, but if we wish to understand the how and the why of peridental trauma, it is necessary for us to investigate and understand the source and operative action of the equal and opposite forces which arrest or stop not only the motion of the mandible but particularly that which stops the functional motion of the individual tooth unit.

The following series of drawings illustrate schematically some of the major physical principles underlying the operative action of the original muscular effort and the equal and opposite forces. These drawings do not embody the actual method by which these physical principles are employed in the masticatory mechanism. Taken as a whole, these drawings embody the essential elements of our accepted premise.

(Figure 1) This drawing shows a pull which is activated into being by

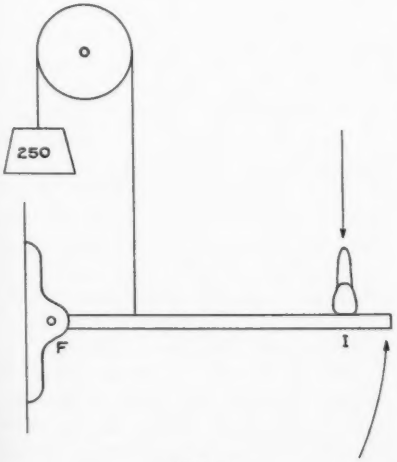

Fig. 1

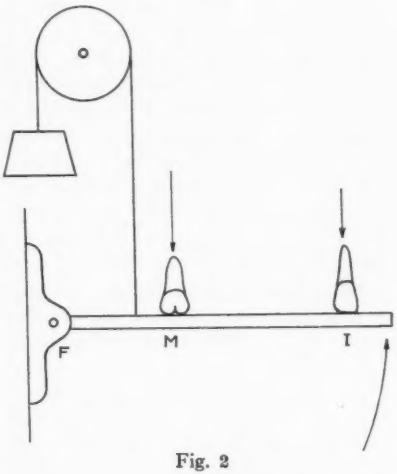

Fig. 2

a weight attached to a rope running over a pulley, the rope being attached to a lever. If the pull is of sufficient magnitude, the lever will revolve around its fulcrum in an angular direction as indicated by the curved arrow. If a force of sufficient magnitude is applied at right angles to the lever in the position indicated by the central incisor, there will be no further movement of the lever. Observation and experience clearly indicate that, regardless of the magnitude of the pull, a much smaller force applied by the central incisor completely stabilizes the lever, owing to the mechanical advantage which accrues, as schematically shown.

(Figure 2) Now suppose we apply, again at right angles, an additional force at the position indicated by the molar. Notwithstanding the fact that we, as dentists, may not be able to state in the definite language of the physicist the principles involved, common experience indicates that the force required at the central incisor, in this second instance, as compared to the former instance, is less, regardless of the relative magnitudes employed.

(Figure 3) Now suppose that six additional right angle forces are applied, making a total of eight, as indicated by the full unilateral complement of maxillary teeth. It is perfectly apparent that the forces required to stop the motion of the lever at the incisor and molar of the previous diagram are again materially lessened, regardless of the relative values of the additional applications.

(Figure 4) By changing the contour of our lever, as shown in this diagram, we in no way change the mechanical principles involved. Here we have a variable assortment of magnitudes of force as represented by the different length arrows. The possibilities for variation in the magnitudes of the individual applications, the total of which counterbalances the weight, are infinite in number. It is perfectly apparent that any increase in the magnitude of force applied at any of the eight points of application, as indicated by the arrows, lessens the magnitude required at each and every other point, and that the greater the number of points of application, the less the magnitude required at any one point.

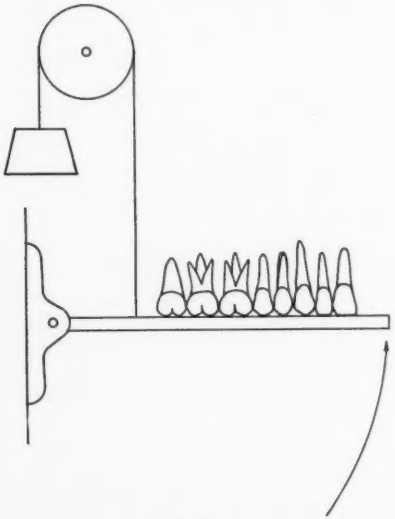

Fig. 3

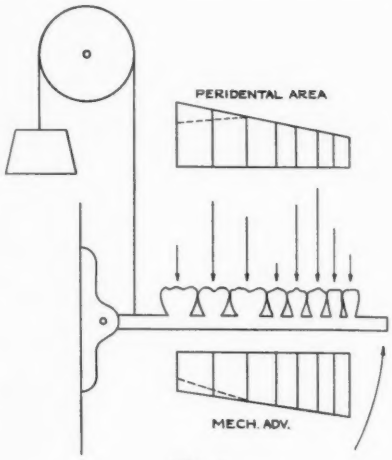

Fig. 4

I call your attention to a common feature of the diagrammatic *schemata* as shown up to this point—namely, the application of force at right angles to the lever. This feature has an important bearing upon that which follows.

Common observation and experience have taught us that, generally speaking, root areas, and hence peridental membrane areas, *increase* anterio-posteriorly along the unilateral length of the dental arch. This relative increase is shown, in conformity with our diagrammatic scheme, by the vertical lines at the top of figure 4. The change in the direction of the top line at the sixth vertical line from the right side is more nearly in conformity with the actuality. I have attempted to demonstrate how the mechanical advantages *decrease* anterio-posteriorly, owing to the difference in length of the effort arm and the resistance arms of the lever. This decrease is diagrammatically illustrated by the vertical lines at the bottom of figure 4.

The use of teeth in this scheme of presentation gives us an implied analogy to that of the masticating mechanism at centric occlusion where motion of the mandible ceases. We are all thoroughly conversant with the principle that action and reaction are equal, as represented by the fact that during occlusion the lower teeth push against the upper teeth just as hard as the upper teeth push against the lower teeth. This principle operates during the lateral to centric ranges, and the protrusive to centric range, the same as it does at centric occlusion.

Since the mechanical advantages *decrease* anterio-posteriorly and the individual peridental membrane areas *increase* anterio-posteriorly, it is reasonable to assume that if the magnitude of occlusal stress applied to each and every maxillary and mandibular tooth unit were in conformity with the combined considerations of mechanical advantage and peridental area, the forces engendered in the peridental membranes would be an equalized minimum, that is, equal per unit of area. We all know that even where each and every maxillary and mandibular tooth unit of each functional segment makes continuous occluding contact with its opponent or opponents, during the unilateral ranges or the bilateral range to centric as occurs in a normal occlusion, a premise of such mathematical exactitude is incorrect. However, the nearer the approach to such a hypothetical ideal the more equitable the distribution of occlusal stress as an environmental factor of peridental cell life.

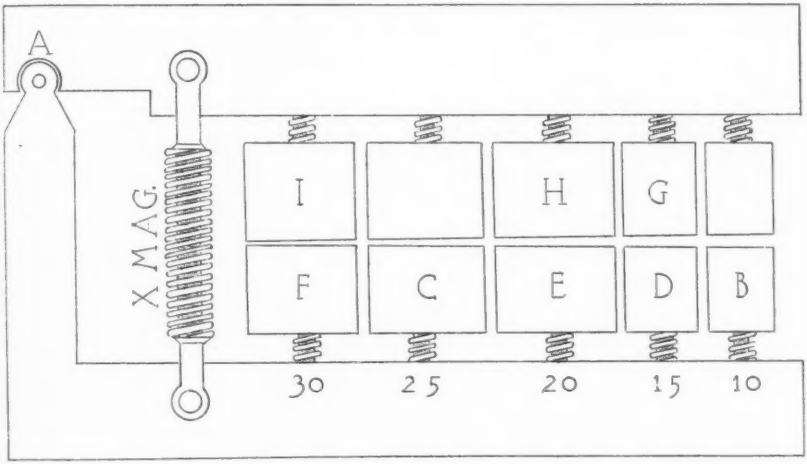

Fig. 5

(Figure 5) This drawing, in conjunction with the one which immediately follows, is offered as a recapitulation of the principles illustrated up to this point. It is purely schematic and is intended as a mechanical and numerical demonstration of the interdependence of mechanical advantage and relative magnitude of force in conformity with relative peridental area, a cooperative evolutionary phenomenon which is designated as equitable distribution of masticatory force.

The phrase, "equal distribution of force," which is used so generally when

reference is made to occlusal stress, is unscientific, and should never be used except when used in conjunction with bilateral equivalents during the protrusive-to-centric range of a normal occlusion.

(Figure 6) This drawing illustrates, in a similar manner, the principles underlying inequitable distribution, the essential elements of which are more or less inapplicable at centric occlusion but which are found as a result of cusp interference during functional motion. The question might be asked, "Interference with what?" The answer, simply stated, is—interference with the continuous occluding contact of all opponents of the actively participating functional segments during the occluding ranges of the mandible.

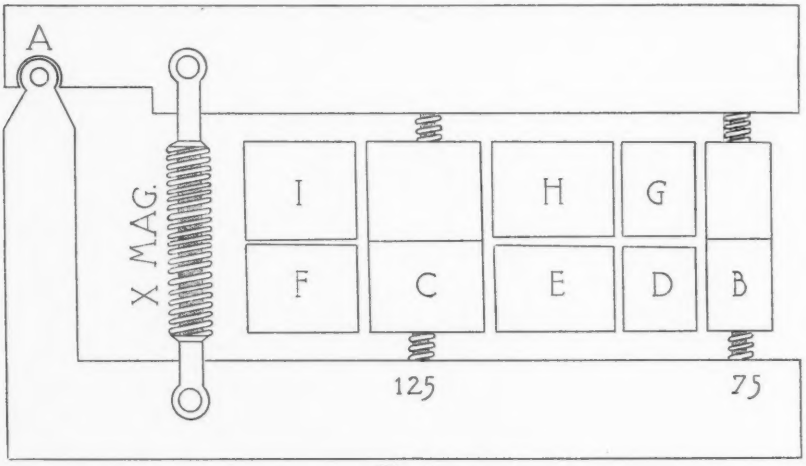

Fig. 6

It is perfectly obvious that the principles underlying equitable and inequitable distribution, as schematically illustrated, are likewise operative when applied to dentition when centric relationship obtains, the analogy to the diagrammatic scheme being complete in the respect that motion of the mandible and its denture has ceased. However, the question arises, "Do these same principles apply during the instantaneous denture relationships of the three functional ranges when the mandible is moving?" Before attempting to answer this question I digress in order to lay the foundation for the presentation of other factors which are involved in the answer.

The normal act of mastication is a system of cycles of functional sequences. This system consists of three separate and distinct cycles, two of which we will designate as the triturating cycles, the remaining one as the incising cycle. Each cycle consists of a multitude of occluding and non-occluding denture relationships. All these functional cycles, when once in operation, have the same beginning and the same end, namely, centric occlusion. Generally speaking, in any selected instance, more teeth are in occlusal contact at centric occlusion than at any other instantaneous denture relationship during the occluding portions of each of the three functional cycles. Centric occlusion is a stationary or static denture relationship, and is of little importance from the standpoints of either equitable distribution or func-

tion. Centric relationship is a denture relationship wherein both motion and function have momentarily ceased. For this reason, if for no other, centric occlusion has received entirely too much consideration because it has been at the expense of the multitude of instantaneous denture relationships of occluding function.

The non-occluding portion of the incising cycle ends at the initial occluding instantaneous denture relationship known as extreme functional protrusive. The non-occluding portions of the two triturating cycles end at the initial occluding denture relationships known as either right or left extreme lateral occlusion.

To deny the necessity for the longest possible functional occluding range to centric as an essential element of functional efficiency clearly denotes either careless or insufficient observation or immature judgment.

Since equitable distribution reaches its highest attainment at centric occlusion in practically all selected instances, and since centric occlusion is a static or non-functional denture relationship, it seems rather strange that the profession has looked upon it as of such singular importance.

From the standpoints of trauma and the causative factors involved, let us compare the assumed importance of centric occlusion with that of some other instantaneous denture relationship. For this purpose I have selected a denture relationship which I consider to be of extreme importance not only from the standpoints of occluding function, functional efficiency and equitable distribution, but also from the standpoint of the operative action of the physical principles underlying trauma. My selection for this purpose is the denture relationship, extreme lateral occlusion.

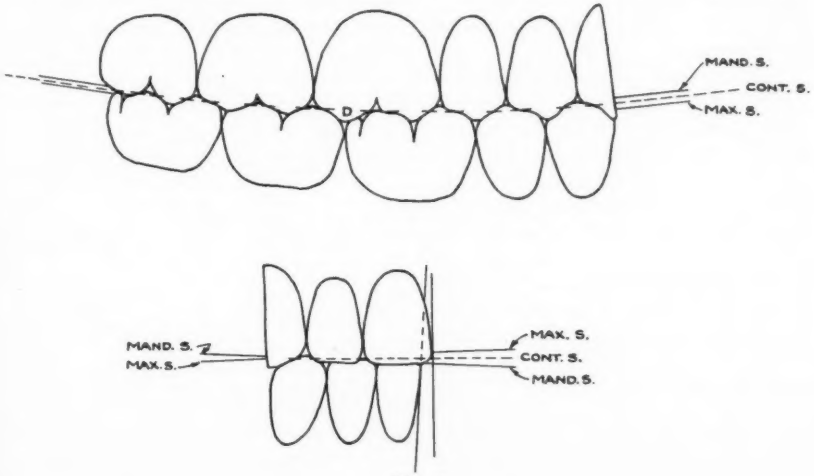

Fig. 7

(Figure 7) This drawing attempts to depict the simultaneous contact of all opponents, of not only the triturating segments but also of the incising segments of the unilateral half of a normal dentition at extreme lateral occlusion. This schematic diagram illustrates the cooperative extent to which Nature goes in her adaptive mechanisms if given a

chance. The triturating segments, as shown at the top, being unilateral in their functional nature, are concerned only with the trituration of food. Nevertheless, they have the full cooperation of the incising segments which are not directly concerned with trituration. This cooperation is manifest by the simultaneous initial contact of all opponents of all four segments and their continuous contact throughout the full range to centric, thus reducing the impact of the initial occluding relationship to an equitable minimum and maintaining the distribution of occlusal stress at an equitable minimum throughout the full range to centric.

From the standpoint of equitable distribution, we observe the same cooperative mechanism in a normal occlusion through the application and operative action of the principle of spherical congruency during the protrustive-to-centric range where the incision of food is the objective, in that all the opponents of both right and left triturating segments, as well as those of the actively functioning incising segments, are in continuous contact during the entire occluding range to centric.

Normal occlusion can therefore be defined in this respect as one of Nature's adaptive phenomena, with equitable distribution as one of its primary objectives. If occlusal stress is an environmental factor to which adaptive mechanisms respond either successfully or unsuccessfully, it seems logical to conclude (1) that normal periodontal structures, as shown by Doctor Kronfeld,[1] are dependent to a considerable degree upon equitable distribution, as exemplified in normal dentition; and (2) that some of the deviations from the normal are the result of the application of an unjust load of occlusal stress applied to the individual tooth unit.

1. Kronfeld, Rudolph, Ill. D. J., 8, 1, 13.

We will, therefore, direct our attention to the cause and effect relationships associated with the application of force to the single tooth unit, selecting out of this unilateral half of dentition, as represented in figure 7, an upper bicuspid to represent such a unit. An analysis of cause and effect relationship as applied to our biscuspid should reveal (1) the occasion for deviations from the normal, and (2) other physical principles which, taken in conjunction with those already demonstrated, should answer the question as to whether motion of the mandible affects in any way the operative action of the physical principles which determine the equity or inequity of distribution when there is no such motion.

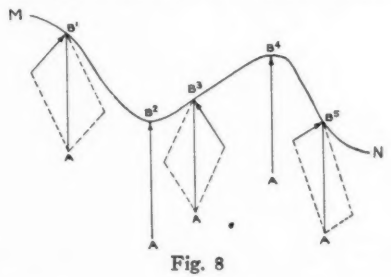

Fig. 8

Since we are interested in the relationship between the cause, which in this instance is occlusal stress, and the effect, which is the deviation from the normal, it is necessary to bring into the picture a principle of physics which stipulates that the effectiveness of a force is determined by the angle of application. A consideration of this principle is imperative, owing to the associated observations, (1) that the distribution of the original contractile force takes place through the medium of the cusps, not only of our selected bicuspid but all cusps, both anterior and posterior; (2) that occluding surfaces are not planes but irregularly curving surfaces; and (3) that cusps vary in height.

(Figure 8) In this drawing, let the

arrows AB, of which there are five in number, represent various applications of force, of a given magnitude, to a curving surface MN. The magnitude is represented by the length of the vertical arrows or lines. The science of physics teaches that when a force is applied at right angles to a surface, as at B2 and B4, its effectiveness is in the direction of the force, as indicated by the arrow, and is proportional to its magnitude. Physics also teaches that if the force is applied at an angle to a surface other than at a right angle, as illustrated at B1, B3, and B5, the force is resolved into two forces, one of which acts in its effectiveness at right angle to the surface, the magnitude of which depends upon the angle of application—the more acute the angle the smaller the force. It is the right angle component in which our interest now centers, a feature to which your particular attention has been directed.

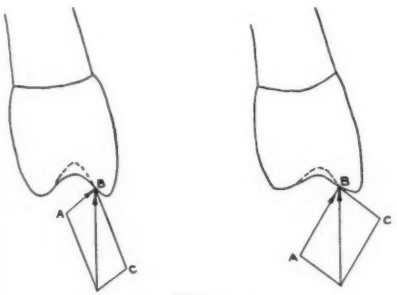

Fig. 9

We will illustrate how the magnitude of this right angle component varies by means of a schematic drawing, using two upper bicuspids to interpret the application of this principle.

(Figure 9) You will note one bicuspid (the one on the left) has long sharp cusps, and the other has the so-called short, flat cusps. In each instance, the available energy, as determined by the mechanical advantage associated with the mandible and as represented by the length of the vertical lines, is identical. However, owing to the fact that the angle of application is more acute in the instance of the longer cusp, the magnitude of the right angle component is smaller, as represented by the difference in length of the lines AB. Therefore, while the mandible is moving, that portion of the available energy which is resolved into occlusal stress varies as the angle of application varies, due to a change of relative position of occlusal contact.

In order to clarify some of the statements which are to follow, I digress to explain the exact significance of the terminology. The members of our little cooperative organization use the terms "functional cusp height" and "anatomical cusp height." (Figure 10) This drawing illustrates the significance of these two terms, which I will explain without offering any details as to their origin or reasons for their adoption. (Figure 11) This drawing illustrates the significance of the term "relative functional cusp height," although greatly exaggerating the relative increase. We also use the term "relative bucco-lingual functional cusp width," a term which originated as the result of a study of the horizontal component of three dimensional mandibular motion in its relation to the differentials of motion.

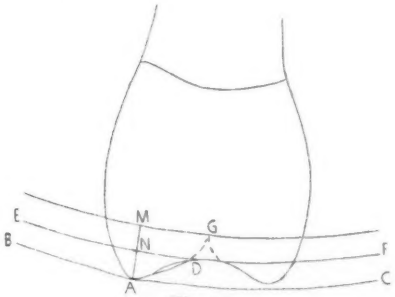

Fig. 10

You readily perceive that these terms are an outgrowth of our belief in the application of the principle of spherical congruency to normal dentition.

Using the geometrical relationships of a normal occlusion, as partially outlined by Doctor Drew,[2] as a basis for computation, we find it a comparatively simple procedure to demonstrate the universal posterio-anterior increase in functional cusp height, and the relative increase in any selected instance. Furthermore, observation confirms such abstract deduction as well as the functional actualities associated with the differentials of angular motion. Consequently, owing to this increase in cusp height and buccolingual width, it must necessarily follow that there is a general relative increase in acuteness of the angle of application of force along the line of the dental arch toward the median plane. Therefore, when all opponents are in contact during the lateral-to-centric range, the magnitude of the right angle components (in other words the magnitude of the various individual occlusal stresses) is progressively reduced posterio-anteriorly along the line of the dental arch. This circumstance is in conformity with the mandibular mechanical advantage and relative peridental area. Recalling your attention to Figure 9, we find the residue of the available force is represented in each instance by the line BC. These latter components, which we will designate as the centric components, are in no way concerned with occlusal stress. They represent the force which is available for the trituration of food and which carries the mandible to the centric relationship. Regardless of the posterio-anterior decrease in the available masticatory force, the relative magnitude of these latter components, in any selected instance, increases posterio-anteriorly along the lines of the dental arch by virtue of the same set of structural circumstances which cause the right angle components to decrease posterio-anteriorly.

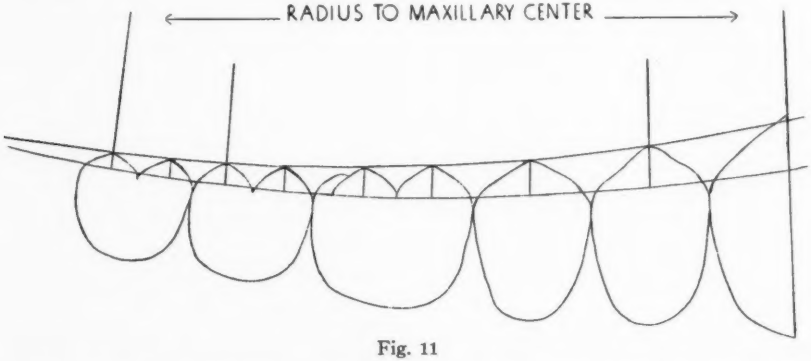

Fig. 11

The diversity of opinion as to whether the motion of the mandibular denture is subservient to the condyles or the occlusion during occluding function should be forever done away with by a recognition and correlation of the facts that, (1) the available masticatory energy at any occluding contact is divided into a right angle component, called occlusal stress, and another component which we designate as the centric component, and (2) that the effectiveness of a force is in the direction of the force and proportional to its magnitude.

2. Drew, A. J., Ill. D. J., 7, 12, 468.

Correlating the factual circumstances in connection with the resolution of forces with the essential elements of the two specific applications of the principles under discussion, one of which results in equitable distribution, the other in inequitable distribution, we are forced to conclude that the principles of the lever concerned with the interdependence of magnitude of force, mechanical advantage, and relative peridental areas where there is no mandibular movement, also apply during occluding mandibular movement, with the exception that during the movement the magnitude of occlusal stress is less than the available energy owing to the additional element and operative action of the principle which determines the effectiveness of a force, namely, the angle of application. This deduction is naturally based upon the assumption that the muscular contraction which gives rise to the forces under discussion is still operative when the mandibular denture having reached its centric relationship ceases to move.

What is the exact significance of the phrase "the effectiveness of a force," as used in connection with the term "occlusal stress"? To answer this question, it is necessary to introduce another principle of physics, known as "moment of force" and more generally referred to as torque. Before attempting to demonstrate how torque is determined, I remind you of the premise upon which this discussion is based. This premise stipulates, among other things, that the individual tooth unit moves during functional contact with an opponent. We will agree that the motion is angular in nature, if for no other reason than the fact that rectilinear motion is purely a hypothetical ideal, since it is not found in Nature at any time or place.

By virtue of the fact that functional motion of a tooth is angular in nature, the tooth is resolved into a concrete example of the hypothetical lever. We will further agree that under ordinary conditions occlusal stress is not applied at right angles to the long axis of a tooth, that is, the tooth lever. Our next step is an analysis of the principles associated with the application of a force to a lever at an angle otherwise than a right angle. An understanding of these principles constitutes an answer to the question relative to the significance of the phrase, the effectiveness of a force, as used in conjunction with the term occlusal stress.

In the language of the physicist, torque is defined as the product of a force multiplied by the perpendicular distance from the fulcrum. (Figure 12) In these two diagrams we have two identical levers which revolve around their fulcrums, designated by the letter F. In one instance (the one on the left) a force of 10 units is applied at right angles, whereas in the second instance, a force of the same magnitude is applied at an acute angle, as indicated by the arrows. These two forces are applied at an equal distance from the fulcrums, as measured along the two levers. The perpendicular distance of the force from the fulcrum, in the instance of the one on the left, is indicated as six units; whereas the perpendicular distance in the second instance is two units, as indicated by the dotted lines. Multiplying 10 by 6, we have the product 60, which indicates the torque, or turning effect, of the force applied at a right angle; whereas the product of the force and its perpendicular distance in the second in-

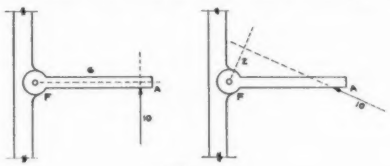

Fig. 12

stance is 20, which figure indicates the relative turning effect, or torque, where a force of the same magnitude is applied at this particular acute angle.

We will now change the form of these levers to that of an upper biscuspid and attempt to demonstrate the torque, or turning effect, induced by forces none of which are applied at a right angle to the lever, but all of which are applied at a right angle to the surface of the crown. We will divide this demonstration into two subdivisions in order to illustrate the relative degree of torque where equitable distribution prevails as compared with the turning effect upon the bicuspid in the event that it makes contact with its opponents at extreme lateral occlusion slightly before its neighbors make contact with their opponents during the range to centric occlusion. (Figure 13)

In the first of these hypothetical instances, we will stipulate that we have equitable distribution from the lateral to the centric extreme of the triturating range of the mandible. The bicuspid is carrying its just proportion of the masticatory load and let us say that the available masticatory energy is 15 pounds, as indicated by the vertical arrows, one of which points to the tip of the buccal cusp, the other to the marginal ridge. In this latter instance, the 15-pound force is applied at a right angle to the marginal ridge. Its effectiveness is in the direction of the force and is proportional to its magnitude. The lever in this instance is a line drawn through the point of occlusal contact to a point located somewhere in the region of the apex of the tooth. The perpendicular distance of this force from the fulcrum is 2½ units, as indicated at the top of the diagram. The torque is therefore 15 times 2½, or 37½ at the centric relationship. Now let us see what happened at the initial occluding contact of this range—that is, at extreme lateral occlusion. The drawing on the left embodies the application of the principle relative to the angle of application which we have just been illustrating. As in the previous instance, we have the available equitable load of 15 pounds, but in this instance it is applied near the tip of the buccal cusp. However, in this latter instance, the force, being applied at an acute angle, is divided into (1) an occlusal stress of, let us say, 10 pounds, the effectiveness of which is at right angles to the surface, and (2) the residual force which carries the mandible to the centric relationship. The perpendicular distance of the 10-pound occlusal stress from the fulcrum is 9 units. The torque at the extreme lateral relationship is

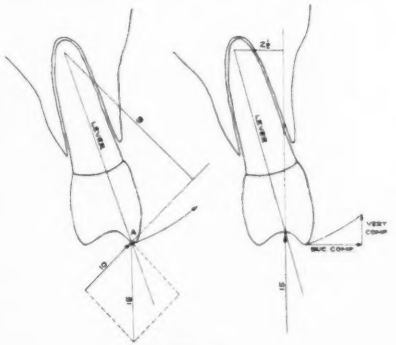

Fig. 13

therefore 9 times 10, or 90. Therefore, we have, in the instance of equitable distribution, a torque of 37½ at the centric extreme, and a torque of 90 at the lateral extreme of this functional range, with various degrees of torque obtaining at the innumerable intervening relationships. I place these figures in diagram form for convenience of comparison with the torque which obtains in the case of the hypothetical inequitable distribution that will be demonstrated next.

Equitable Distrib.
of Occlusal Stress
15 lbs. | 10 lbs.

Centric		Lateral
	Torque	
37½		90

Inequitable Distrib.
of Occlusal Stress
15 lbs | 75 lbs.

Centric		Lateral
	Torque	
37½		450

Now suppose that our bicuspid, by virtue of a mal-posed long axis, is forced to carry an unjust or inequitable masticatory load of 75 pounds at the lateral extreme of the three dimensional range and, that as its opponents move to the centric relationship, the occlusal stress is gradually reduced by virtue of the remaining teeth in the lateral segments coming into contact until at centric relationship the occlusal stress equals 15 pounds. We are justified in such an assumption because more teeth make occlusal contact at centric occlusion than at any other denture relationship in malocclusion.

Thus we see, by a comparison of our figures, that in the case of inequitable distribution, the turning effect upon the bicuspid at extreme lateral occlusion is five times as great in this hypothetical instance as that which obtains in the case of equitable distribution. Recalling observed gnathodynometer readings in bicuspid areas, we realize that the figures used in demonstrating the relative degree of torque have been very conservatively selected.

(Figure 14) In the diagram on the left, the inference is that the tooth movement resulting from the torque is largely buccal in its direction—that is, that the buccal or horizontal component of the movement is dominant. By adding a buccal perspective, as shown on the right, the mesial or sagittal directional quality of the torque is indicated. However, by the addition of the reactive pressure of a mesial contact point, as shown by the arrow, the directional quality of the torque again undergoes a change.

In demonstrating principles, I have

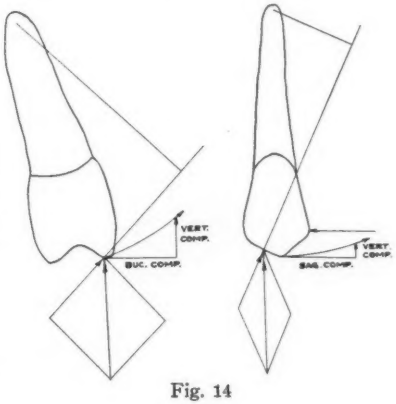

Fig. 14

resorted to the simple expedient of using only one application of force to the crown of the bicuspid. One should not confuse the interpretation of a principle with some specific application of that principle as, for example, where an individual tooth is subjected to many points of occlusal stress applied to opposing slopes of a single cusp, or of three or four cusps, or to buccal or linqual cusps, or to both buccal and lingual cusps. Although very important, such considerations do not fall within the scope of this paper.

I have, thus far, introduced and attempted to discuss some of the more important physical principles concerned in occlusal stress in its relation to functional tooth movement.

By combining these various factors into a schematic whole, I will attempt

to demonstrate not only the origin and operative action of the equal and opposite forces which stop tooth movement, but also the relative magnitude required in the separate instances of equitable and inequitable distribution. We have seen how, through the application of occlusal stress and the principle of torque, the individual tooth units become levers, subject to the same principles already illustrated by the schematic analogy to the mandible as a lever. From the standpoint of collective tooth movement, a comprehensive survey would involve an analysis of the interaction of one long lever, corresponding to the mandible, and many short levers, representing the teeth, but for our purpose in demonstrating principles, we will resort to the use of one long lever and one short lever, as shown in the next two figures.

(Figure 15) Before explaining this drawing, I remind you again of the definitely established physical principle that when an object is set in motion by the application of a force, the object continues to move indefinitely in the direction of the force until forces equal and opposite become operative. This diagram is offered primarily to show the exact significance of this statement as applied to the functional motion of a tooth lever. This drawing is a continuation and extension of the diagrammatic scheme, in that it embodies a short lever (shown on the right), the fulcrum of which is indicated as F1.

If a force is applied to the small lever in a direction and at a position opposite to that which obtains at the end of the long lever as a result of the weight pull (indicated by the arrow A) and if the two forces are equal in magnitude, there will be no movement of either lever. Please bear in mind that we are dealing with instantaneous relationship. If the force applied to the small lever is applied nearer its fulcrum (indicated by either of the two longer arrows at the top and on the right) the magnitude of the force must be increased if there is to be no movement owing to the mechanical advantage which accrues. The nearer to the fulcrum the force is applied, the greater the magnitude required (indicated by the relative lengths of the arrows). The instance first cited illustrates the exact significance of the phrase "equal and opposite," as applied to a single force which brings an object in motion to a state of rest. In the second instance cited—that is, where the magnitude required is greater—a third force is brought into being at the fulcrum of the small lever as the result of the torque. This third force is represented by the arrow B. It acts in a direction parallel to the force A—that is, in the same direction. If there is no movement of the two levers, force C must equal force A plus force B, hence the expression "forces equal and opposite." I call your attention to the fact that in this latter instance the force required to stop the movement of both levers is greater than that which is applied to the short lever by the long lever.

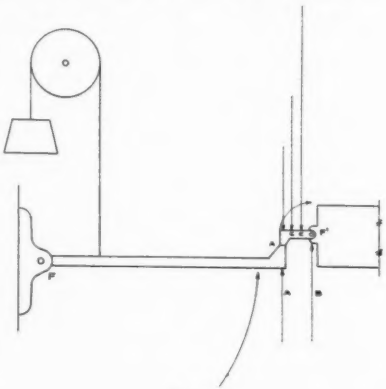

Fig. 15

(Figure 16) This drawing is a schematic attempt to embody all the principles introduced as they apply to the

individual tooth unit. Our objective, as stated in the beginning of the discussion, is an analysis of the equal forces which are also opposite to those which arise as a result of the contractile quality of the muscles of mastication. Our objective is concerned also with the origin and operative action of these equal and opposite forces.

The diagram on the left shows the crown of a lower bicuspid in occlusion with the upper bicuspid which we have used in the scheme of presentation. The

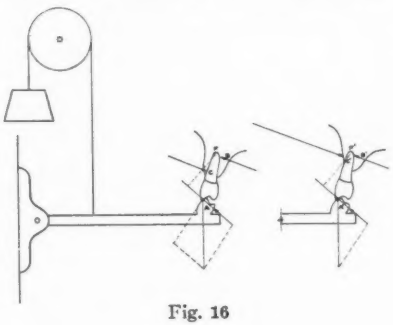

Fig. 16

diagram embodies also, (1) the muscular pull, (2) the long mandible lever and the mechanical advantage, (3) the right angle component, occlusal stress, indicated as arrow A, (4) the tooth lever, and (5) the forces B and C brought into being as a result of torque, one of which, C, is opposed to the occlusal stress, the other of which, B, acts parallel to and in conjunction with the occlusal stress. The forces B and C are known as static forces. They arise in the building blocks of the peridental structures, that is, in the cells. These forces are the equal and opposite forces which stop motion of the mandible and tooth unit.

From the preceding demonstration, you will recall that force C is greater than force A—that is, the static force at the crest of the alveolar process is greater than the occlusal stress by the amount of the static force in the region of the apex.

I offer a very homely illustration of static force, as well as the relationship of the magnitude of force and trauma: If I run across the room and butt my head into a wall, the force which puts my head into motion is acting in the direction in which I run, but the force which caves in my head acts in an opposite direction to that in which I run. This latter force is static force, and comes into being as a result of the contact of the moving head with the wall. It arises in the building blocks of that wall and is equal and opposite.

The amount of trauma would be dependent upon the magnitude of the static force. Trauma of the peridental cell is likewise dependent upon the magnitude of the static forces, which magnitude in turn is dependent upon the degree of torque. The degree of torque to which any individual tooth is subjected depends largely upon the equity of distribution of the original muscular effort.

The trauma caused by the impact of the head and the wall is the result of a single action, whereas peridental trauma is the result of repeated action.

The diagram on the right illustrates how the magnitude of the static force required to stop tooth movement is increased as soon as the destruction and resorption have once been inaugurated. This is indicated by the increased length of the arrow C. This increase is occasioned by the static force being necessarily applied nearer the fulcrum, as shown in the previous drawing. This combination of circumstances accounts for the increased rate of destruction when the adaptive physiological processes are no longer able to compete successfully with the occlusal environment.

My one purpose, thus far, has been the demonstration of physical principles as called for by the title of my paper.

I have made no attempt to interpret the specific application of these principles as found in the masticating mechanism regardless of the fact that I have resorted to the use of cross-sectional and perspective drawings of teeth. These drawings have been used for the sole purpose of clarity of presentation. My object in emphasizing these facts is to warn you against the danger of fallacious inferences, or deductions, arising from the use of two-dimensional drawings in conjunction with an analysis of the physical factors involved in a system of bodies, such as the masticating system, where questions of relativity are introduced by virtue of the fixation and motion of different parts of the system. Such procedures have led to more fallacious deductions concerning the factors involved in occlusion than any other one thing. I remind you of the many instances where drawings of two-dimensional concepts are superimposed upon photographs or upon what purports to be drawings of three dimensional objects. Such procedures have resulted almost invariably in fallacious deductions, some of which are generally accepted as of truthful import and which, at best, can not be designated as even a half-truth. As one of many examples which could be cited, the Curve of Spee is outstanding, representing as it does an absolutely impossible situation, a fact which accounts for the further fact that it has never been defined in a manner that even approaches exactness as to its landmarks of application to the individual tooth units of either the maxillary denture, the mandibular denture, or of both dentures. Such definition is an impossibility. In order to become a part of straight thinking, the Curve of Spee must be resolved into a three dimensional curvature concept, amenable to bilateral application, with the median sagittal plane used as a basis for the dimensional aspects; otherwise it has no place in the thought processes of a profession which wishes to be considered scientific.

In this connection, since I have mentioned the median sagittal plane, I state that any premise relative to occlusion or any of the factors concerned therewith, which uses anatomical landmarks of whatever nature or location in conjunction with an empirically selected plane, otherwise than from a purely descriptive dimensional aspect, is doomed to failure from its inception. Man uses straight lines and planes hypothetically; Nature in no instance resorts to their use. This is the basic reason why many of the geometrical premises relative to teeth and associated anatomical structures have proven to be fallacious, as Doctor Brodie stated in his paper.[3]

It may seem strange that geometry has any relationship to human dentition. However, science cannot be divided into separate unrelated subdivisions. The convenient attempt to do so is for the purpose of teaching immature minds. If you accept the Curve of Spee as of truthful import, then you are accepting a geometrical premise. I dislike the word infantile when used in this connection, but at best our confirmed allegiance to this premise indicates a tardy acceptance of well established dynamic laws.

Possibly this tardy acceptance can be accounted for by the ease and pleasure with which our minds step into habitual lines of thought, especially where so many conflicting opinions are held. Possibly our failure to coordinate the functional facts of occlusion with long and well established physical principles is due to our general subservience to prestige, which, as the history of science definitely points out, has often crushed many movements of scientific discovery at the beginning. As one of the many instances which could be cited, I am sure we all know how the prestige of the learned men and the professors of the medical schools discredited for a full generation

3. Brodie, A. G., Ill. D. J., 8, 1, 2.

Harvey's discovery of the circulation of the blood. Since the thought processes of such men are so commonly not in conformity with actual facts, or, in other words, since their deductions are so flagrantly wrong, it is not surprising that we ordinary mortals in the dental world fail to keep pace with scientific progress in other lines of endeavor. Whatever the reason for all this, I am sure that the full truthful import of the Curve of Spee, which came into existence in 1870, is on a parity, from the standpoint of maturity of development, with many other beliefs and practices of the dentistry of that time.

The elements of truth contained in the two conceptions, the Curve of Spee and the Compensating Curve, when coordinated by Monson, gave rise to his hypothesis, known as the Spherical Principle, which, as we know, has not been generally accepted. A careful analysis of this latter conception, as formulated, reveals empirical claims which are not in conformity with functional facts and dynamic principles. This fact, no doubt, accounts for the refusal of investigators to accept his theory.

I trust you will excuse my apparent digression from the principles underlying trauma. I believe such digression is justifiable for this reason:

Professional subdivisions which are thoroughly conversant with dynamic laws, and those which deal specifically with spatial relationships, never challenged the correctness of our answer.

In support of this statement I wish to recite an experience of Doctor Bignell's which is similar to many which I have had. While he was explaining our hypothesis concerning the structural functional character of normal dentition to a noted engineer and acquainting him with some of the important factual details upon which our claim is based, relative to the presence of two spheres, the maxillary and mandibular, he was interrupted by the engineer who explained to him the necessity for the presence of a third sphere from the standpoint of function, at the same time offering a very excellent explanation of the functional character of this third sphere and its relationship to the maxillary and mandibular spheres. Doctor Bignell was so pleased that he listened until the engineer had finished, whereupon he informed the engineer that we had recognized the presence of this third sphere and had long since named it, the contact sphere.

Regardless of the argument that an engineer deals with non-living mechanisms, whereas our concern is centered upon a living mechanism, all things of a physical nature are amenable to and activated by physical laws.

It is indeed very gratifying to me to realize that the deductions of an amateur physicist are in perfect conformity with the research findings of an eminent histologist, such as Doctor Kronfeld.

Conclusion

The object lesson of my demonstrations is very obvious, namely, that equitable distribution and the reduction of torque to a minimum are an imperative necessity of any scientific operative procedure of a comprehensive scope where the welfare of peridental membranes is a concern. Interest in such welfare immediately suggests the question as to the value of an understanding of the operative action of the physical principles underlying trauma unless further knowledge is available whereby such understanding can be used to advantage. In other words, how can this imperative essential be put into practical execution? Our answer to the above question is the adoption of the principle of spherical congruency as an operative approach to an unattainable ideal, dynamic equilibrium. Regardless of the opinions which you and I may hold, "the test of truth is its consequences in action."

55 E. Washington St.,
Chicago, Illinois.

THE PHYSIOLOGY OF THE PERIODONTAL MEMBRANE*

By J. Roy Blayney, B.S., M.S., D.D.S.

It is a pleasure to take part in this symposium on "Occlusion." As Dr. Kronfeld has pointed out, it is only in comparatively recent times that we have used human material for the detailed study of the supporting structures. Therefore, it is not at all surprising that it is necessary for us to make some adjustments in our understanding of the function of this tissue from that which we held as a result of the histologic study of animal tissue. In order to fully appreciate the physiology of the supporting tissues of the denture it is essential for us to have a clear concept of:

(1) the factors which have been active in the evolutionary development of the human denture,

(2) the function of all the anatomic parts of the crown of each tooth, i. e. occlusal planes, ridges and grooves, the contour of the axial surfaces, the proximal contact areas, etc.,

(3) the function of the root as determined by the shape of the root itself, as well as the understanding of the direction of all the forces which are exerted upon the root and then transferred to the supporting tissues when the teeth are in ideal occlusion with normal contours of the coronal surfaces,

(4) the direction of all the forces which are exerted upon the component parts of the denture when they are considered individually and collectively, when they are either at rest or under function,

(5) the biology of the tissues which are immediately concerned in the support of the tooth, i.e. the cementum, the fibrous tissue or periodontal membrane and the bone.

To fulfill these requirements we see that it is necessary to consider the problem from a broader or more general viewpoint than either the anatomical or the physical. We must use the biologic viewpoint which is all embracing.

Dr. Maxwell has stated "My assignments on the program is the discussion of physical principles underlying trauma," and "..... our efforts must be confined to the environmental phases of peridental cell life, as exemplified by the mechanical technic towards which this symposium points."

His following statements are correct when they are interpreted to mean that we should strive to restore human dentures to the point where the physical forces exerted upon each tooth, when considered either by itself or as a member of the entire denture, are in accord with biological laws which have governed the development of our dentures. In other words, the understanding of these biological principles are just as important as the physical laws and, therefore, cannot be excluded from the full discussion of the subject. Dr. Maxwell discussed the direction of forces of occlusal stress as applied to teeth under several conditions but he has failed to consider either physiology or ability to react to stimuli, of the root of the periodontal membrane, or the alveolar bone to which this stress is ultimately applied.

To again quote, he says "Normal occlusion can therefore be defined in this respect as one of Nature's adaptive phe-

*Presented before the Odontographic Society of Chicago, December 13, 1937, as a discussion of the papers presented by Drs. Kronfeld and Maxwell in the symposium on "Occlusion."

nomena, with equitable distribution as one of its primary objectives. If occlusal stress is an environmental factor to which adaptive mechanisms respond either successfully or unsuccessfully, it seems logical to conclude that (1) normal periodontal structures, as shown by Doctor Kronfeld, are dependent to a considerable degree upon equitable distribution, as exemplified in normal dentition; and (2) that deviations from the normal are the result of the application of an unjust load of occlusal stress applied to the individual tooth unit."

It has not been my experience to find a normal periodontal membrane only in those cases of "equitable distribution" "during the protrusive-to-centric range where the incision of food is the object, in that all the opponents of both right and left triturating segments, as well as those of the actively functioning incising segments, are in continuous contact during the entire occluding range to centric." The so-called occlusal trauma is not the only factor to be considered in disorders of the periodontal membrane. We are only beginning to understand the physiology of the supporting tissues. A better understanding may be developed through the study of the histology of these tissues when interpreted in the light of the various conditions of occlusion, which to me is of the greatest practical importance. It is towards this last quotation from Dr. Maxwell's paper that I direct my remarks. I hope you will keep the quotation in mind.

It is my belief that the biologic laws which have controlled the development, and the factors of safety inherent in all tissue cannot be so readily dismissed. We have all seen cases in which the supporting structures were quickly involved so as to permit considerable movement of the tooth in question with little explanation on a local basis. Again some teeth have an abnormal amount of movement with little periodontal destruction and others remain firmly fixed in spite of considerable tissue involvement. We must consider response to certain stimuli which the tissues of an individual are capable of making as well as the purely physical laws which are encountered in the study of occlusion.

In the main the discussion of the physical principles, as presented by Dr. Maxwell, are correct when considered only from the physical standpoint. However, when thought of as forces acting upon the tooth root and its supporting structures, I feel that there is an opportunity for discussion. For instance throughout the presentation of both the preceding papers each essayist has considered the fact that the tooth acts as a lever of the first class, i.e. there is a fulcrum placed along the tooth root somewhere near the apical region. There are those who believe that the tooth swings as a pendulum from the root-end and that the apical fibers on one surface do not assist the alveolar crest and horizontal fibers of the opposite side during function. While I am inclined to hold to the opinion of the tooth acting as a first class lever, we should not be too dogmatic in our statements regarding this until the problem has been thoroughly investigated and the results made known.

One of the slides schematically represented the points of mechanical advantage on the lever with the peridental area for each point. In this diagram the bicuspid roots were shown as having more surface area for periodontal attachment than the cuspid. Throughout the animal kingdom, wherever the canine is found, it is the largest single root in the denture. Therefore, the cuspid is capable of assuming much more work than the premolars and when all of the forces which are exerted upon the cus-

pid are evaluated we see that this tooth has a much greater load even though it is in a position of greater mechanical advantage. The surface area on each root of each tooth varies according to the function which the particular surface is designed to assume and is not as simple as the diagram portrays. The shape of each root has evolved to best meet the forces which are exerted upon it in accordance with the type of bone which ultimately receives the stimulation.

With this brief and sketchy background I would like to direct your thoughts toward the function of the periodontal membrane or, as Dr. Maxwell has put it, the force which stops tooth movement. It seems to be the time-honored custom to think of the periodontal membrane as a cushion or shock absorber placed between the cementum and the surrounding alveolar bone to "take up" the jolt which would be occasioned by the meeting of the maxillary and mandibular teeth in much the same manner as an air cushion or mattress would absorb a jar. For a good many years I have taught my classes almost the exact opposite. Whenever stress is applied to a tooth crown in any direction the force is immediately transferred from the tooth to the surrounding bone through certain group or groups of periodontal fibers as a pull and not as a pressure. When these fibers go into function as guy wires between the cementum and bone, there are similar groups of fibers which are relaxed and momentarily thrown out of function. These relaxed fibers do not act as a cushion or mattress interposed between the root and the alveolar process. We frequently hear it stated that sufficient occlusal pressure has been exerted to compress or squeeze the periodontal membrane between the tooth root and the bone producing necrosis, also that this repeated pressure is causing the resorption of either the cementum or bone. It is a well accepted fact that bone is built as a result of a demand for it and that when this demand is removed it will be resorbed. Also that this demand for bone is in the nature of a pull stimulation rather than a resistance of force as a pressure. To illustrate let us look at a longitudinal section of a rat incisor which may be roughly described as being a segment or arc of a circle. Here we see that the labial plate of bone is extremely thin and is incapable of withstanding even light force. (Fig. 1). Again the labial surface of this tooth is covered with enamel and/or enamel forming organ from the incisal tip to near the root-end. We see that enamel is not found on the lingual surface of this tooth even in the coronal portion.

This distribution of tissue is for a definite purpose. It is essential for rodents to have sharp chisels or incisors. When we examine their masticatory stroke we find that it is impossible to use their incisors and molars at the same time. In order to use either type of tooth the other is placed in such a position that it is thrown out of function, which means that the full force of the load is placed upon the incisors whenever they are functioning. In gnawing, the rodent stroke is to bring the labial or enamel surface of the mandibular incisor in contact with the lingual or cemental surface of the maxillary incisor which produces a labial thrust on the maxillary tooth and a lingual thrust on the mandibular incisor. Then the stroke is altered so the lingual or cemental surface of the lower is in contact with the enamel or labial surface of the upper tooth, thus producing a thrust to the lingual on the maxillary crown and to the labial on the mandibular incisor. This alternate stroke causes the harder enamel surface to rub against the softer cemental or

dentinal surface and in this manner keeps the incisal edges sharp. These teeth can function efficiently only when the incisal edges are sharp. It is this perfection of the tool which permits these animals to gnaw through hard substances without injury to the delicate supporting tissue. Reference to this relationship between the efficiency of the cutting or working surfaces of the tooth to the amount of supporting tissue required and the pathologic physiology will be mentioned later. Rodents have developed the curved incisor teeth in order to provide a mechanism whereby the gnawing chisels are constantly sharpened, to provide for the continual formation of enamel and, last but not least, to produce a tooth and jaw capable of withstanding the strain of function and at the same time be of the least possible bulk and weight. If we analyze this further we see at once that the thin labial plate of bone is incapable of resisting pressure and that if the tooth is suddenly forced against the labial plate of bone the ameloblasts would be injured, resulting in either a defectively formed enamel or the complete destruction of the ameloblasts. The curved root is the only principle which could be employed to efficiently meet all of the requirements. It is also now easy to understand that the periodontal membrane does not act as a cushion but that function is in the nature of a pull. When a labial thrust is applied, the fibers in the gingival half of the root are under tension and the apical half are relaxed. When the thrust is toward the lingual the gingival portion of the fibers are relaxed and the apical are under tension.

It is not in the least difficult to transpose this mechanism to the human denture. The examination of a few skulls will suffice to substantiate this point. It is a well known fact that the forces which play upon the maxillary cuspid

Fig. 1

Photomicrograph of a midsagittal section of an upper incisor of a normal rat 65 days old. (Courtesy Schour, Isaac and Steadman, Sherwood R., *Anatomical Record,* November 1935.)

when in normal position and with normal contacts tend to force this tooth labially and yet we know that the labial plate of alveolar bone is very thin. Also when we find a marked recession of the labial supporting tissues over this root we do not find a corresponding loosening of the tooth. If the labial plate of bone and the periodontal membrane were acting as the resisting force we would find a much heavier development of the labial process and also the recession of the labial bone and soft tissue would materially weaken the attachment. This same reasoning may be applied to all of our teeth; however, it is more easily demonstrated by the upper molar and the upper and lower anterior teeth. If we think of the periodontal membrane as functioning only when the fibers are placed under a tension, which is immediately transferred to the alveolar bone as a pull, we will have a more correct understanding rather than considering this tissue as a cushion or mattress.

It is difficult for me to understand the frequent reference found in the literature that alveolar bone and cementum resorption is the result of too much pressure. If there is sufficient tooth movement to permit the crushing of the soft tissue interposed between the cementum and bone on one side of the tooth root, it then follows that there has been an undue stretching or tearing of the periodontal membrane on the opposite side. Again, I do not believe that an intermittent pressure as produced by occlusal function would result in resorption because this reaction requires a constant pressure. This statement is made advisedly after discussing the subject with those who are devoting their entire time and thought to orthopedic surgery and the study of the reactions of bone in general.

It is logical to explain the resorption of bone and the loss of the periodontal membrane, on the side towards which the tooth is thrust by occlusal forces, to the lack of function. When dealing with bone, changes occur much more readily when static rather than when dynamic conditions prevail. When an increased occlusal force is applied to a tooth root we may expect to find an increase in the development of the periodontal membrane on the side of pull or the side of dynamic force. As the tooth moves away from the alveolus, when under an increased function, which is within biologic limits, additional bone is laid down to provide anchorage for the periodontal fibers and to accommodate the mesial drift. If this occlusal force is too severe, producing a definite injury to the soft tissue, or is continued for too long a time, we may expect to find degenerative changes taking place as the factor of safety possessed by the tissue has been exceeded. When the mesial drift is considered, which is so important to the well being of our dentures, we find that the resorption and pocket formation on the mesial surfaces of the roots is largely through the lack of function, i.e. a static condition while the pocket formation on the distal surfaces is due to over function, i.e. dynamic condition. It is not uncommon to find resorption of alveolar bone progressing more rapidly on the mesial or afunctional side.

CONTACTS AND CONTACT POINTS: PROXIMAL AND OCCLUSAL

Proximal contacts have an importance far beyond that which is generally recognized. While it is true that proper proximal contact points protect the underlying soft tissue from injury by food impaction, they also have another very important function to perform. If you wish to prevent periodontal disease the proper proximal contact point must be

developed whenever a proximal surface is restored and the normal mesio-distal width of the interproximal space must be developed whenever possible. This means that some form of separation is to be employed either to gain space that previously has been lost, or to develop additional room to permit the polishing of the contact point area when plastic fillings are inserted. The other function of the contact point, to which I referred a moment ago, is to give the tooth, under full function at any one instant, additional support from the adjacent teeth. The denture is so designed that no one tooth is expected to carry its full normal load by itself, without receiving additional support from neighboring teeth through the contact points. If contact points on restorations are not very carefully designed and accurately placed we may be responsible for the development of a periodontal disturbance about the tooth in question as well as about its neighbor's or even in the opposing jaw. It is not sufficient for a contact point to be snug at the time the restoration is placed. It is impossible to maintain the normal mesio-distal width of the interproximal spaces if the approximating surfaces of two adjacent teeth are not in correct relationship to each other. If the point of contact is too far, either to the lingual or buccal, or to the occlusal or gingival, then the two convex surfaces will gradually but surely glide by each other. (Fig. 2). This will result in, first, the loss of the normal width of the interproximal space; second, the loss to the area under consideration of secondary support provided by the adjacent teeth and thereby placing of an excessive load on the periodontal membrane of this area; third, the reduction of a large portion of functional stress particularly on the mesial aspect of the distal tooth which makes up this contact unit.

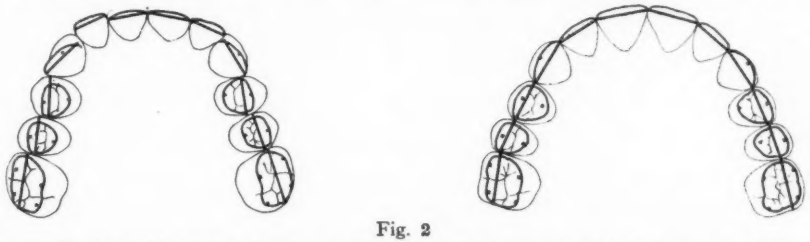

Fig. 2

Left. Pantographic tracing showing position of proximal contact points in improper relation. Right. Pantographic tracing showing proximal contact points in proper relation to each other. (Courtesy Dr. William Downs.)

Many periodontal disturbances may be explained, controlled or prevented if we will give sufficient attention to the physiology of the proximal contact area.

To many, the phrase "contact points" refers to only the proximal contacts. This is unfortunate as normally we have occlusal contact points which are as important for the correct functioning of our dentures as the proximal contacts. A broad flat occlusal contact plane is as inadequate and detrimental to the periodontal membrane as is a broad flat proximal contact. For illustration may we again refer to the denture of the carnivora. Here we find that for an efficient carnivora denture it is necessary to have bladed teeth which completely pass each other and convex buccal surfaces of the lower carnassial tooth which glides over the convex lingual surface of the upper tooth. This mechanism pro-

(*Concluded on page* 91)

The Illinois Dental Journal

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• EDITORIALS •

YOUR DUES ARE DUE

We closed the year 1938 with the largest membership in the history of the Illinois State Dental Society. To all those interested and responsible for this achievement the officers extend their appreciation.

We begin a new year and of course aim at greater heights, and ask for the same loyal cooperation in this task. The problems ahead are important. We need the cooperation of everyone who enjoys the privilege of practice in Illinois.

On March 1st the membership list will be cleared and only those who have paid their 1939 dues will receive the benefits of the State Society and the American Dental Association.

Do not let your membership lapse.

BEN H. SHERRARD, *President.*

DENTISTRY IN *LIFE*

Last July, several dentists in our immediate neighborhood were rightfully incensed at a popular pictorial weekly of good repute for presenting a series of photographs that were highly uncomplimentary to the profession of dentistry in that they purported to register the excruciating agony of a patient while undergoing a dental operation. It was obvious to all that the camera had recorded dramatic poses rather than candid views in order to obtain sensational photographic interest. We promised, at that time, to express in these columns our disapproval of such unbecoming tactics, but a communication from Dr. C. Franklin MacDonald, Chairman of the Greater New York Bureau for Dental Information, caused us to withhold our comments.

Dr. MacDonald enclosed with his letter the following conciliatory reply received by the Bureau in response to its protest to the editors of the magazine referred to above.

Dear Dr. MacDonald:

August 13, 1938.

I hope you will forgive this belated reply to your letter. Unfortunately, our correspondence has been so heavy these last few months that I could not be more prompt.

The Editors have asked me to tell you how much we appreciate your writing. Such constructive criticism as yours is always particularly welcome and we are glad to have any possible error in judgment pointed out to us.

Frankly, we did not consider the pictures "Oh Doctor" from the point of view of the dental profession and we greatly regret that they should seem derogatory or harmful. The "Pictures to the Editors" section is usually devoted to amusing or interesting contribuptions from our readers and is not intended to be taken too seriously. We do, however, agree with you that in this case special thought should have been given to the possibility of an unfortunate association which might seem detrimental to dental science. Most assuredly, none was intended and we deeply regret any such impression.

Life has, from its first issue, cooperated with the medical profession in publishing a series of health and medical articles for its readers. It is very kind of you to offer us the services of the Greater New York Buerau for Dental Information and we shall be happy to have your assistance in the future. I hope that we may have occasion to call on you for material on a dental article shortly.

Sincerely yours,

ANNA GOLDSBOROUGH, *Editorial Secretary.*

The splendid ten-page portfolio on dentistry that appeared in the January 10th issue of *Life* may or may not be a direct result of the activities of the Greater New York Bureau for Dental Information but *Life* is to be as much commended for this exceptionally accurate portrayal of interesting facts and figures as is the New York Bureau for its efforts to rid the public press of all forms of dental caricatures.

STATE DENTISTRY OR — — — —

The merest allusion to governmental interference in dentistry, undoubtedly, constitutes a cause for nightmare to all the members of the profession. And certainly it should! Such a state of affairs can only be envisioned as was the old haunted house of childhood days—with cold chills running up and down backs and jitters prevailing. But this possibility has already become a probability and may well become a definite fact unless something is done about it, and that something done soon.

In a recent talk on the possibilities and means of improving dental conditions in the United States, before a group of the American Public Health Association, at Kansas City, Missouri, Dr. Guy S. Milberry emphasized the inability of the dental profession as constituted at the moment to cope with a situation which is at once serious and deplorable, and at the same time offered a suggestion which at first glance might seem a remedy, but which upon careful thought proves dubious and even rather dangerous.

Dr. Milberry stated that there are something like 30,700,000 children in this country from the age of 2 to 14, all of whom need some kind of dental service

each year. The question may well be asked, as he intimates, how many of these are totally deprived of actual dental treatment or even education in dental health which might serve to carry them along until it be hoped they may become self-sufficient and able to command the care to which they are entitled?

He speaks of "preventive dentistry" as the most recent development in dental science. This is true, but, as most of us are aware, preventive dentistry *per se* does not as yet really exist. Unfortunately, at the present time such procedures consist merely in the early discovery and possible curtailment of mouth deficiencies and in the education of the laity in dental hygiene.

However that may be, the fact remains that there is only one very important period at which the inroad of destruction of not only an important part of the digestive tract—the mouth and teeth—may be controlled, but of even more importance, the normal psychological development of an individual may be safeguarded, and THAT IS IN CHILDHOOD.

Dr. Milberry questions the possibility of dental practitioners, under present circumstances, ever being able to care for even a small percentage of the children needing this attention. He, therefore, suggests as a solution to the problem a two year period of concentrated training of individuals, resembling the education given at present to the dental hygienist, who, when set up in clinics equipped at a very moderate cost, will be able to do something toward the alleviation of some of the dental deficiencies of the underprivileged child. However, he has neglected to enlighten us as to how all the expenses of such an undertaking will be defrayed, but with his constant reference to public health service, a distinct flavor of governmental influence is detected, and that, it is believed, is not at all desirable.

Regardless of how Dr. Milberry's idea impresses us, it cannot be denied that it indicates on his part an awareness of an extremely important problem and undoubtedly a sincere desire to do something about it. But this is the thought of only one individual. Suppose all members of the profession, who are bound to be involved if the situation hinted at in the title becomes a reality, would realize the true outcome and devote some real serious thought to the problem, what might be the results? What a large number of workable, more satisfactory solutions for all concerned might be forthcoming!

In the light of what seems to be the trend of movement these days, it would seem not only advisable, but imperative, that immediate action in this direction be taken by organized dentistry. W. G. S.

JAMES EDWARD MAHONEY

James Edward Mahoney, or just plain "Jim" as he is known down Wood River way, is the distinguished appearing, hard working Chairman of the Membership Committee who migrated to Illinois in the early 1920's via the State of Massachusetts, the United States Army and Georgetown University.

This son of John and Margaret Dowd O'Mahoney was born in North

Brookfield, Mass., May 4, 1896. When he was six years of age his family moved to the manufacturing center of Natick, Mass., which you may or may not remember was founded in 1651 by the Indian preacher and apostle, John Eliot. Here, in this famed New England environment, young Jim received his grammar school education which was followed by four years at nearby Boston College Preparatory School.

July 7, 1917 found this son of Irish blood keeping faith with ancestral tradition by enlisting in the regular army at Syracuse, New York. He was assigned to the 38th Infantry (Rock of the Marne Regiment), 3rd Division and after a training period in Camp Greene, North Carolina sailed overseas where he spent five active months in the front lines of Chateau Thierry, St. Mihiel and Argonne Forest. While with the Army of Occupation at Andernach, Germany, soldier Mahoney was appointed dental assistant to the 3rd Division Dental Surgeon and continued in that capacity until his regiment was returned to this country on August 6, 1919.

Whether Jim had any intention of becoming a dentist prior to his service in the army we do not know but immediately after receiving his discharge papers he enrolled at Georgetown University Dental School, Washington, D. C. While in college he became a member of Psi Omega fraternity and served his active chapter as Grand Master during his Junior Year. He also served his class as secretary for each of the four years it spent in dental school. Between his Junior and Senior years he married Aletha Stolze of Edwardsville, Illinois and following his graduation in 1923 took his bride back west to establish a home and practice in the then newly formed town of Wood River, Illinois which has now become noted for its many oil refineries.

During the intervening years Dr. Mahoney has become a well established practitioner of dentistry and a respected citizen of his community. He is the father of two fine boys, James Stolze, age fifteen and John Albert, age eleven. He participates actively in the affairs of the American Legion, Veterans of Foreign Wars, Rock Springs Country Club and Wood River Rotary Club. He is a charter member and past president of this latter organization. Dr. Mahoney joined the Illinois State Dental Society in 1924 and has proven himself an indefatigable worker in its behalf ever since. He served on the executive council of the Madison Component for several years and was elected its president in 1935. During his term of office the membership increased from 47 to 73. Such work naturally attracted the attention of the State Society Officers and they duly appointed him Chairman of the Membership Committee.

Jim informs us that his one ambition while chairman of this committee is to see Illinois lead the A.D.A. in membership. Such a worthy ambition coupled with the Mahoney personality and fighting spirit augurs well for the future of the Illinois State Dental Society.

• *HERE & THERE* •

The thing of greatest dental importance in this state, and probably in the United States, during February, is the 75th annual Midwinter Meeting of the Chicago Dental Society. Next to the annual meeting of the American Dental Association, the Chicago Midwinter Meeting is the largest dental society meeting in the United States, and probably in the world (although this is a moot point with New Yorkers.)

This year several new features have been added; Wallace Kirby, Chairman, and Lester Clow, Vice Chairman, of the Radio Committee have arranged to put on several broadcasts directly from the Stevens Hotel. These programs will demonstrate sound effects, methods of broadcasting, etc., and should be particularly interesting. John Svoboda, Chairman of the general Clinics, and Pete Wlodkowski, his assistant, have arranged a program of what will be known as "Limited Attendance Clinics"; attendance at these special clinics will be limited to a specified number of men who must register for the clinic beforehand. Many Illinois dentists, including downstaters and Chicagoans, will appear on the program. Out of Chicago Dentists may safely plan to come in for the entire meeting and bring the "little woman" along; the ladies will be entrusted to the tender care of Florence Lilly and Mabel Tichy, who have quite an entertaining program planned.

H & T

Each month, when we arrive at this particular portion of HERE & THERE, we are positively amazed at what an interesting phylum dentists seem to be—or are they? And each month it is a wonder we have not received a bomb or a bit of arsenic from one of our friends, by mail. To wit: Did you know that Harry Pinney, Secretary of the American Dental Association, was quite a ball player in his day? . . . . William E. Mayer of Evanston, former President of the Chicago Dental Society, (this will simply slay you, and he will want to slay us) used to be known as "Wild Bill," but that was years ago. . . . Ray Schuler, Illinois '23, has no idiosyncrasies, avocations, moles or tics, to our knowledge, though several counties still have to be heard from for a complete report. . . . A. Hurt practices dentistry in Cicero. . . . Carl Madda smokes only cigars now, as he is a pretty fair politician in his community. . . . Gordon Smith of Alton is quite an athlete playing a good game of tennis and golf, and being addicted to speed boating. . . . There are only six Hills in Illinois, C. J., I. N., L. H., L. E., L. L., and O. D. . . . There is one Guy in Aledo; he is M. D. from the class of 1928 at Missouri. . . . Lester Gadde of Belvidere was one of the most quiet men in the class at school. . . . Mary Meade of Carmi is well on the way to being in the oil business; a well about 600 feet from her line is bringing in 300 to 500 barrels of oil a day. . . . B. H. Klueg of Jerseyville is Grand Knight of the local Knights of Columbus. . . .

Harold Hillenbrand, Editor of the Chicago Dental Society Bulletin recently brought out his magazine with a new cover design, a new make-up and a complete new typography; if you have seen the new Bulletin you can testify to its neatness; if you haven't you must take our word for it, it's a very nice job.

H & T

Life Member C. L. Hine of Tuscola (Ind. '04) was recently presented with the "Silver Beaver" award by the Arrowhead Council of Boy Scouts of America. This award was given him in Champaign, December 18, 1938 for distinguished service to American youth. The only higher honor in Scouting is the "Bronze Buffalo," a national award. Doctor Hine has been active in Boy Scout work in Tuscola for about thirty years.

H & T

What the insurance fellows won't think of! A new policy has just come out to insure artificial dentures against breakage, fire, theft, and accidental loss. The following losses, according to the company have already been paid: (1) Assured in her haste to get off the train left dentures in glass in drawing room. (2) A seasick assured lost dentures overboard on ocean liner. (3) Dentures dropped on floor while cleaning and were accidentally stepped on. That seems to take care of the patient rather well; now all we need is a policy that will take care of the dentist under the following circumstances: "They hurt right up here, doc.," "They're swell until I start to eat with them, doc.," "I never had any trouble with my uppers, but I can't even wear these new lowers, doc." "My wife says they don't look right."

H & T

Alfred T. King of Cicero, has a very informative article about hydrocolloidal impression material in the "Practice In Paragraphs" department of the February Journal of the American Dental Association.

H & T

Charley Motz, new president of the Rock Island Dental Society, and formerly component editor, writes a little verse now and then. The following, titled "The Six Year Molar," is one of his:

Absolute knowledge have I none,
But my aunt's wash-woman's, sister's son
Had such a toothache just last week,
That a dentist the poor boy had to seek;
And the tale of woe that dentist told
To this lad, only eight years old!
He said it surely was a sin
The shape that achin' tooth was in;
That it should be saved at any cost
For the mouth is a wreck if that tooth is lost.

And then the mother he did scold;
Said when the lad was six years old,
That permanent tooth had come to place
To act as a guide in shaping the face;
And to serve as a cornerstone of the dental arch;
And that is the time that she should march
Her future sons to the dental chair,
That they might receive the proper care.
So I guess from the way he raved
The six year molar should be saved.

Wm P. Schoen. h.

• DENTAL HEALTH EDUCATION •

A Department Conducted by the Committee on Dental Health Education of the Illinois State Dental Society and the Illinois State Department of Health

Edited by CHARLES F. DEATHERAGE, D.D.S.
Chief, Division of Dental Health Education, Springfield, Ill.

SUGGESTED PROCEDURE FOR NURSES IN ORGANIZING A DENTAL HEALTH EDUCATIONAL PROGRAM

The following outline was written by the Division of Dental Health Education as a guide for the Division's dental assistant nurses (registered nurses) in their work of promoting, organizing and assisting dental health programs throughout the State of Illinois. It clearly sets forth all procedures which, if followed, make possible the desired cooperation between school authorities, welfare and civic organizations, children, parents, dentists and local health authorities. It is here presented so that the dentists in the Illinois State Dental Society may know more about the functioning of the Division's activities.—C. F. Deatherage.

I. Instituting the Program.
   A. Meet with the health superintendent of the district.
      1. Discuss:
         a. The communities or sections of the district in which such a program would be most beneficial.
         b. Dental health problems and past dental health educational programs.
         c. The type of general health program now being carried on by his staff.
         d. The lay organizations and individuals that should be contacted regarding such a program.
      2. Arrange with the district health superintendent for a meeting with his staff and discuss the methods of correlating a dental health educational program with that of the general health program.
      3. Be guided by his wishes, as he has charge of his district and knows the situations of his district.
   B. Consult with the organized group of dentists and ascertain their interest in such a program; also, if possible, contact the Component and County Dental Lieutenants in the districts.
      1. Discuss:
         a. Type of program, plans, and policies to be conducted. (That it is purely educational in character.)
         b. Purpose and method of the dental health examination.
         c. Types of dental examination record charts and report forms to be used.
         d. Literature to be distributed to parents.

e. Their cooperation in such a program whenever possible.
f. Past work in dental health.
g. Plans for a definite follow-up program.

2. Urge the local dentists to take a definite part in the follow-up program.

C. Meet with the county superintendent of schools in the county in which you plan to work.

1. Discuss:
   a. The schools and communities in his county most desirous of such a program.
   b. The value of such an educational program in his schools.
   c. Plans and type of program to be conducted.
2. Arrange for a dental speaker for each county teachers' institute.
3. Work out a schedule for rural schools with him and suggest that he write a personal letter to each of his teachers stating time of the visit and urging them to have as many mothers present for the dental health examination as possible.
4. Arrange for a meeting of all rural school teachers and discuss with them:
   a. Type of program to be conducted.
   b. Purpose of a dental health examination.
   c. Dental health record charts.
   d. Literature.
   e. Value of having parents present for the examination.
   f. Reports.
5. Secure map of county from him.

D. Arrange to meet with the city school superintendents and principals.

1. Ascertain their interest in such a program.
2. Discuss:
   a. Type and value of a dental health educational program.
   b. Method of examination.
   c. Value of having parents present for such an examination.
   d. Report forms following examination.
   e. Literature available for teaching dental health.

E. School or County Nurse.

1. Discuss:
   a. Previous dental health program and difficulties encountered, also type of program now being conducted.
   b. Type of program and means of correlating a dental health educational program with that of the general health program.
   c. Possibilities of a definite dental health educational program.
   d. Methods of improving the present program if such is being conducted.
   e. Organizations and individuals most interested in a dental health educational program.

F. Arrange to consult with the presidents and health chairmen of all lay or civic organizations in the community.

1. Discuss:
   a. Their interest in such a program and their willingness to cooperate in the program.

b. Their part in the program and the value of such a program to their respective communities.

2. Urge each health chairman to arrange with his respective program chairman to include at least one meeting a year on some phase of dental health education.
3. Arrangements for the different lay organizations to organize young mothers' study clubs and have regular meetings so that at each meeting some phase of dental health can be discussed. These meetings should be in the form of classes and the different stages of dental health explained, such as, pre-natal period, the child from birth to three, the child from three to six, the six-year old child, from six to adult life, etc.
4. Discuss the possibilities of organizing a permanent Dental Health Club.
   a. Arrange with the officers of each lay organization, or some duly appointed representative, to attend a meeting for organization purposes.

G. Organization Meeting.

1. After the above work has been completed a meeting should be called of the representatives of the different lay organizations, school superintendents, principals, teachers, school or county nurse, and dentists for the purpose of organizing for a dental health educational program.
   NOTE: Arrange for a short inspirational dental health educational program.
2. Elect a chairman or president and secretary.
3. After the program the newly elected chairman or president should appoint or have elected the following committees:
   a. Promotional Committee or Committee on Permanent Organization. This Committee should have as its members the superintendent or principal of schools, local members of the Illinois State Dental Society, school or county nurse, and presidents of the different lay or civic organizations or some individual appointed by the presidents. Urge the classroom teachers to select members to represent them on this committee.
   b. Publicity Committee.
      (1) From the above group a sub-committee should be formed for the purpose of publicity.
      (2) Would suggest wherever feasible the editor or editor's wife of the local newspaper as chairman of this committee.
4. Following appointment of committees the chairman or president should request the secretary to secure the names of those willing to volunteer their services in this program.

H. Organization of a Permanent Dental Health Club.

1. Following the organization meeting the newly elected chairman or president should request the chairman of the Promotional Committee for a meeting of representatives of interested organizations and individuals for the purpose of organizing them into a dental health club. The name of the club should be voted by members present. A chairman or president should be elected and various committees appointed.

(Would suggest appointing the original publicity committee.) Chairman or president should be a lay individual. Program chairman should be a dentist. Meetings should be held at various intervals and at each meeting some phase of dental health should be discussed. Two or three meetings a year should be open to parents. This organization, then, will become the leader of a community dental health program and will be of great assistance in bringing the program before organized lay groups on parent and child education, also in conducting dental health examinations.

I. Arrange to consult with editor of local newspaper regarding publicity during the time the program will be conducted in the respective communities or towns.

II. Arrangements for a Definite Dental Health Educational Examination or Dental Health Appraisal.

A. Make arrangements with:

1. Superintendents or Principals.
   a. Time.
   b. Place.
   c. Room in which to conduct the examination. Try to secure a room well lighted and ventilated. (Arrange for tables, paper towels, and water.)
   d. Grades in which they wish to have the program conducted.

   NOTE: Remember you are there to cooperate and work with the school officials.
   e. Clerical help. (Suggest two or three upper grade students.)
   f. Notify parents.

   Suggest that a notice be sent to each parent, urging him to be present for the examination. Thus the school becomes an active part of the examination. This notice should give the time and place of the examination, e.g.

   First grade—9:00 to 10:30 A. M.
   Second grade—10:30 to 12:00 Noon.
   g. Dental Health Record Charts.

   Suggest that the teachers of each room fill in the following on each card for each pupil: Name, Address, Sex, Age, Grade, School Temperament, School Progress.
   h. Arrange for a meeting of the teachers for the purpose of discussing their part in the program.
2. School or County Nurse.
   a. The county or school nurse is a valuable asset to the program and detailed arrangements should be discussed with her at the same time you discuss them with the superintendent or principal, if possible.
   b. Be guided by her wishes.
3. Sponsoring lay organizations:
   a. For at least two members to act as clerks in the morning and afternoon.
   b. Educational meeting preceding dental health examination.

c. Suggest that all parents be urged to attend this meeting.
d. At the meeting explain:
The importance of the parents being present for the examination. That the examination is purely educational in character and no diagnosis will be given. The relationship of good health and good teeth and the value of a dental health program. The dental health examination chart, literature, and notification cards to be sent home to the parents.
e. For meeting following dental health examination.
On the completion of the dental health examination, a report and analysis should be made on the results of the work.

4. Local Dentists.
a. Discuss arrangements made with the superintendents, principals, teachers, and lay or civic organizations.
b. Urge them to devote as much time as possible to the program and explain the value of their presence during the program.
c. Assist them in arranging their part of the program. (Don't work a free horse to death.)
d. Also urge them to attend all meetings possible.
e. Follow any suggestions offered.

III. Analysis of Dental Health Examination or Dental Health Appraisal.
A. On the completion of the dental health examination, a study and an analysis should be made on the results of the work with the examining dentist.
B. Statistical report by ages should be compiled and compared with that of the State averages. (Summary and Recommendations.)
C. Discuss a definite dental health educational program for the school with your examining dentist, so that the condition of the children's teeth may be bettered.

IV. Publicity.
A. Arrangements should be made with the editor of the local newspaper to publish an article daily during the dental health examination.
B. At the conclusion of the program an article should be published giving the results of the work.
C. Several articles should be left with the editor so that they may be published each week for several weeks following the program.
D. Arrangements for these articles should be made during the time you are making the final arrangements.
E. Send a clipping of each article published to the office of the Division.
NOTE: All articles for publication should be submitted to the Division of Dental Health Education, State Department of Public Health, Springfield, Illinois for approval before publication.

V. Follow-up Program.
A. Superintendents and Principals.
Following the dental health examination a visit should be made to the school with a report of the results of the examination.

1. Discuss:
   a. The different ages in which dental health is below the State averages in Prevalence of Decay, Dental Care, Home Care, and Oral Hygiene.
   b. Arrangements with the teacher to carry on a definite dental health educational program during the school year.
   c. Possibilities of devoting five minutes a day to teaching dental health.
   d. The use of stories, poster and picture contests, dental health clubs, letter or essay contests, and plays.
   e. The booklet "Suggestive Helps in Teaching Dental Health."
   f. 100% Tooth buttons.
   g. Distinguished Effort Certificates.
   h. Posters.
   i. Plays. (Have children write their own play.)
   j. Moving pictures.
   k. Exhibits.
2. Acquaint the Superintendent or Principal where additional dental health education literature may be obtained.

B. School or County Nurse.
1. Discuss:
   a. The final report of the results of the dental health examination.
   b. Type of dental health educational program for the school.
   c. Organizations and individuals interested in such a program.
   d. Be guided by her wishes as she is well acquainted with the school.

C. Teachers.
1. Discuss:
   a. The analysis of the results of the examination of her pupils.
   b. A definite dental health educational program for the school, also methods of stimulating interest among the children to have dental corrections, such as:
      (1) Special school programs.
      (2) Picture and poster contests.
      (3) Holidays or special amount of supervised play.
      (4) Awarding good tooth buttons.
2. Acquaint the teacher where additional dental health educational literature may be obtained.

D. Dentists.
1. Discuss final reports and results of the work.
2. Urge the local dentists to teach dental health classes to young mothers' study clubs.
3. Give a classroom talk at least once a month and an illustrated talk several times each year. Moving pictures can be shown at a general assembly once or twice a year.
4. Urge them to take a definite part in the program.
5. Also urge them to teach dental health in their offices and state where additional dental health literature and services can be obtained.

E. Lay Organizations.
   1. Discuss:
      a. The results of the dental health examination and the value of a definite dental health program, also methods of stimulating interest.
      b. Possibilities of having school children put on a dental health play written by themselves.
      c. Purchasing 100% tooth buttons for children returning 100% slips.
      d. Arrangements to sponsor projects for the necessary corrections to be made for children whose parents are unable to afford dental care. The principal, classroom teacher, school nurse, and local dentist can usually assist in determining those who are entitled to this consideration. Sometimes Boards of Education will help.

F. Parents.
   1. Home calls should be made to each parent not present during the dental health examination to discuss the condition of the child's mouth and the necessity of having dental corrections. Discuss literature that should be read by parents.
   2. Urge:
      a. Them to visit classrooms several times each year to observe work being done in dental health.
      b. Them to continue dental health practices at home for their children.

G. Check-up visits.
   1. Every month or two, if possible, or as many times as feasible, a return visit should be made to the school in order to stimulate the school officials and teachers to conduct a dental health educational program.
   2. Discuss the progress and results of the program, also difficulties encountered.
   3. Discuss methods which may assist the teachers in overcoming the difficulties.
   4. Keep a record of the number of 100% slips returned.
   5. Just before the schools close for the year revisit the school and discuss plans for the following year.
   6. Make a final check of number of 100% slips returned during the year and the teacher's comment for improving the program.
   7. Before leaving try to suggest a new project for the teacher.
   8. Always contact school or county nurse, if possible.

VI. Reports.
   A. A report of each visit and the results accomplished by the schools should be sent to the Division of Dental Health Education, State Department of Public Health, Springfield, Illinois.
   B. The final reports at the end of the school, with results, should be reported to the District Health Superintendent in whose district the program was conducted. They should also be reported to superintendents or principals, teachers, lay organizations, dentists, and other interested groups or individuals.
   C. Discuss with each of these organizations or individuals the accomplishments of the program, also plans for the coming year.
   D. Wherever possible in checking back on a school, be sure to secure the results of the previous year or years work.

• *RELIEF FUND HONOR ROLL* •

SUPPLEMENTAL LIST OF CONTRIBUTORS TO A.D.A. RELIEF FUND

The following members of the Illinois State Dental Society have joined with those whose names appeared in the January issue of the JOURNAL in contributing to the 1938-39 A. D. A. Relief Fund. If any error has been made in name, address or omission the correction should be sent to Dr. E. E. Graham, 58 E. Washington St., Chicago, Ill.

Dr. Mary B. Meade, Carmi, would welcome comments from the membership as to ways and means of improving the 1939-40 campaign for relief funds.

G. V. BLACK DENTAL SOCIETY

McDermott, H.
Neber, L. W.
Ogle, F. C.

CHAMPAIGN-DANVILLE DENTAL SOCIETY

Akerly, G. W.
Hickman, C. W.
Kroner, F. L.

EASTERN ILLINOIS DENTAL SOCIETY

Baughman, D. C.
Burke, R. R.
Jaffee, A. A.
Jones, R. G.
Kennedy, G. L.
Lossman, M. F.
Lumpp, H. C.
Walters, F. L.

FOX RIVER DENTAL SOCIETY

Moore, E. C.
Steele, J. A.
Williams, J. M.

KANKAKEE DENTAL SOCIETY

Baker, M. L.

LA SALLE DENTAL SOCIETY

Elder, Paul W.
Kent, C. W.

MCLEAN DENTAL SOCIETY

Heiple, G. D.
Land, W. H.
Peterson, A. W.

MACON-MOULTRIE DENTAL SOCIETY

Armstrong, H. F.

MADISON DENTAL SOCIETY

Fink, Leroy M.
Maupin, Ira T., Jr.

NORTHWEST DENTAL SOCIETY

Russell, W. R.
Taggart, E. Ethel

PEORIA DENTAL SOCIETY

Lyon, A. E.

ROCK ISLAND DENTAL SOCIETY

Franke, W. F.
Gluesing, J. W.
Nelson, M. J.
Servine, J. S.
Wiggins, S. A.

ST. CLAIR DENTAL SOCIETY

Kuebel, James A.
Kuhn, F. M.
Murphy, J. T.
Potts, H. D.
Reader, J. C.

SOUTHERN ILLINOIS DENTAL SOCIETY

Davis, M. A.
Dunn, Emmet R.
Gillaspie, C. C.
Keith, J. R.
Pickard, J. L.
Rosenberger, E. R.
Wagner, W. E.
Williams, W. E.

WABASH RIVER DENTAL SOCIETY

Baldwin, L. C.
Henderson, E. N.
Kinney, H. W.
Lewis, G. I.
McCallister, R. A.
McGahey, L. E.
Powell, M. C.
Stocke, A. E.
Wylde, D. Z.

WILL-GRUNDY DENTAL SOCIETY

Harpham, R. B.

WINNEBAGO DENTAL SOCIETY

Sharp, Cyril
Spafford, E. A.

NOT CLASSIFIED

Sorley, A. C.

CHICAGO DENTAL SOCIETY

Agster, Wm. C.
Ahlers, F. W.
Alexander, W. E.
Allen, C. M.
Bahlman, Henry W.
Baldassari, L. R.
Behm, J. W.
Belding, C. R.
Betty, Paul A.
Bezkostny, Frank
Blair, F. K.
Bomstad, R. G.
Brasmer, C. E.
Brening, R. H.
Bremner, M. D. K.
Brown, A. C.
Cartwright, G. E.
Case, Charles M.
Cerney, J. C.
Cooley, Linn D.
Cruse, M.
Davidson, P. J.
Davies, C. H.
DeBaise, James
Desenis, N. G.
Devin, J. P.
Dixon, J. T.
Dolson, J. E.
Drea, A. S.
Dybdahl, J. M.
Edlund, E. W.
Ericson, M. G.
Fanning, W. A.
Fleming, T. E.
Franta, W. F.
Frey, Leo J.
Fuessle, Alfred H.
Gaylord, R. E.
Goldsmith, W.
Goldstein, L. M.
Gould, G. I.
Grisamore, T. L.
Griseto, V. L.
Gunnarson, A. T.
Hamilton, B. A.
Hansen, C. W.
Harris, F. S.
Hill, L.
Hurt, A. E.
Jaffee, H. J.
Johnson, A.
Johnson, L. R.
Johnson, R. W.
Kalk, G. P.
Kastel, A. J.
Keith, R. P.
Kirby, W. N.
Kirschner, N. A.
Kolar, J. E.
Komerek, J.
Krohn, Benjamin
Kudell, L. H.
Lachmann, C. M.
Lachmann, E. O.
Leib, M.
Lewbin, H. J.
Lilley, A. F.
Lind, A. E.
Looze, J. B.
MacIver, C. A.
Mammen, D. H.
McNulty, R. W.
Molt, F.
Mudra, James
Mundell, R. B.
Nelson, H. W.
Newberger, Alois D.
Nilsen, Einar D.
Olcott, H. L.
Olson, T. D.
Partridge, B. S.
Pendergast, W. T.
Prendergast, M. J.
Rapp, D. W.
Reid, Thomas
Richardson, G. H.
Ridley, S. R.
Robeson, F. C.
Rzeszortarski, J. S.
Sauer, R. J.
Schaffner, J. H.
Schneider, M.
Shepard, H. B.
Sherry, E. W.
Silhan, G. A.
Simmons, H. L.
Simon, I. N.
Smith, Richard A.
Stasinski, H. A.
Stimson, H. S.
Stuck, L. G.
Svoboda, B. J.
Svoboda, J. F.
Tittle, F. S.
Traxler, M. D.
Unbach, M. J.
Urbanek, J. J., Jr.
Vorhees, F. H.
Weinshenker, L. T.
West, C. C.

• MEMBERSHIP •

This supplemental component membership roster of the Illinois State Dental Society includes the names of all those who paid 1938 dues after the regular membership list was compiled on October 15, 1938 for publication in the 1938 Transactions.

BLACK, G. V., DENTAL SOCIETY

Hill, H. M., Auburn (Mo. 06) 1908. Life Member.

CHAMPAIGN-DANVILLE DENTAL SOCIETY

Gauerke, G. H., 519 The Temple, Danville. (Wisc. 16) 1936

Myers, Donald D., 631 E. Green St., Champaign. (Ind. 37) 1938

Van Vranken, E. J., 113 N. Neil St., Champaign. (Mo. 23) 1936

CHICAGO DENTAL SOCIETY

Anderson, Howard S., 3206 W. North Ave. (N. 30) 1931

Archer, Evert A., 58 E. Washington St. (C. 38) 1938 Graduate

Brown, Maurice S., 5633 Kenmore Ave. (N. 38) 1938 Graduate

Butler, Leslie M., 7439 Cottage Grove Ave. (N. 38) 1938 Graduate

Clickner, W. R., 19 Fulton St., Waukegan. (Ind. 04) 1938

Cusick, Wm. A., Jr., 25 Illinois St., Chicago Heights. (Ill. 16) 1917

Fishman, Irving, 9 S. Kedzie Ave. (C. 38) 1938 Graduate

Friedman, R. I., 686 State Line Ave., Calumet City. (C. 27) 1937

Goldberg, Stanley S., 4753 Broadway. (N. 38) 1938 Graduate

Horn, Bernard, 55 E. Washington St. (C. 38) 1938 Graduate

Lang, Paul S., 5957 W. Lawrence Ave. (C. 38) 1938 Graduate

Lawrence, Allen H., 1959 W. Roosevelt Rd. (C. 38) 1938 Graduate

Meredith, J. L., 708 Church St., Evanston. (C. 13) 1914. Life Member

Natonson, Milton S., 2349 Devon Ave. (N. 38) 1938 Graduate

Ostrom, C. Alston, 7852 S. Ashland Ave. (N. 38) 1938 Graduate

Rosenberg, Samuel Y., 6760 Sheridan Rd. (C. 35) 1936

Scranton, Richard V., 1791 Howard St. (N. 38) 1938 Graduate

Shipman, Ernest L., 122 S. Michigan Ave. (N. 38) 1938 Graduate

Sitron, Harold H., 7001 N. Clark St. (N. 38) 1938 Graduate

Stasiewicz, Wm. S., 8759 Commercial Ave. (C. 38) 1938 Graduate

Tanis, Robert N., 30 E. 111th St. (N. 38) 1938 Graduate

Thwaites, W. H., 2540 Montrose Ave. (Mich 11) Transfer from Michigan

Weissmiller, M. J., 1901 Central St., Evanston (C. 24) 1935

Woldman, Sam L., 2738 W. Devon Ave. (C. 38) 1938 Graduate

EASTERN ILLINOIS DENTAL SOCIETY

Ewart, M. C., Greenup. (Ind. 26) 1927

Podesta, Wm., Mattoon. (Mo. 34) 1935

FOX RIVER VALLEY DENTAL SOCIETY

Peffers, John M., 33 S. Island Ave., Aurora. 1937

GILMER, T. L., DENTAL SOCIETY

Brooking, F. V., Macomb. (Md. 88) 1903. Life Member

Eales, Charles L., Rushville. (Mo. 17) 1938

Haffner, James E., Quincy. (Wisc. 32) 1934

Kibler, O. L., Pittsfield. (C. 95) 1904. Life Member

Mueller, H. C., Quincy. (Mo. 99) 1905. Life Member

Myers, LeRoy A., La Harpe. 1922

Ridpath, T. W., Warsaw. (N. 26) 1934

Seidel, J. H., Majestic Bldg., Quincy. (Ill. 09) 1935

KNOX DENTAL SOCIETY

Fell, R. H., 204 Hill Arcade, Galesburg. (N. 29) 1936

Fleming, C. L., Kewanee. (Mo. 33) 1937

Schwab, C. F., Galva. (C. 19) 1924

MCLEAN DENTAL SOCIETY

Frost, Fred, 226 Griesheim Bldg., Bloomington. (Mo. 36) 1937

MACON-MOULTRIE DENTAL SOCIETY

Hastings, H. M., Morrisonville. (Mo. 29) 1937

Jourdan, Everett C., Blue Mound. 1938

Karr, E. C., Standard Office Bldg., Decatur. (N. 16) 1937

MADISON DENTAL SOCIETY

Bassford, George E., 102 W. Third St., Alton. 1937

Hardesty, R. R., Hardin. (Mo. 07) 1938

Kraft, L. H., Collinsville. (Mo. 1900) 1937

Reid, D. L., 2500 Washington St., Alton. (Mo. 13) 1937

PEORIA DENTAL SOCIETY

Barclay, Harry F., Jefferson Bldg., Peoria (C. 16) 1935

Brader, Robert E., Manito. (N. 34) 1938

ST. CLAIR DENTAL SOCIETY

Collins, John N., 607 Spivey Bldg., East St. Louis. (Mo. 19) 1920

Flannery, V. W., Murphy Bldg., East St. Louis. (Mo. 32) 1935

Hogan, J. M., First Nat. Bank Bldg., East St. Louis. (Mo. 14) 1925

Hood, Kenneth F., 409 Spivey Bldg., East St. Louis. (Mo. 36) 1937

Kuhrtz, Kenneth L., Chester. (Mo. 38) 1938 Graduate

Letterman, W. G., Murphy Bldg., East St. Louis. (Mich. 05) 1906 Life Member

Rauth, E. L., Lincoln Theatre Bldg., Belleville. (Mo. 27) 1928

Robertson, D. R., Belleville. (Mo. 21) 1924

SOUTHERN ILLINOIS DENTAL SOCIETY

Elder, J. E., Eldorado. (Mo. 10) 1933

Holdoway, H. C., Eldorado. (Mo. 23) 1934

Tevis, Wm. A., McLeansboro. (Mo. 13) 1919

Wohlwend, H. L., Cobden, (Mo. 19) 1934

WABASH RIVER DENTAL SOCIETY

Montgomery, O. R., Lawrenceville. 1934

Stocke, A. E., Carmi. (Mo. 29) 1938

Wilken, Clinton H., Oblong. (Ind. 28) 1938

WILL-GRUNDY DENTAL SOCIETY

Bevan, Wm. F., Joliet Bldg., Joliet. (C. 27) 1934

Dainko, Edward A., 410 Joliet Bldg., Joliet. (Wisc. 28) 1937

Lotz, Harry F., 35 W. Van Buren St., Joliet. (Pa. 96) 1905 Life Member.

1938 MEMBERSHIP RESUME

Component	Old			New			Total Members	Membership Loss		
					Recent Grads.*					
	Life	Annual	Reinstated	Regular	$4.00	Complimentary		Delinquent	Deceased	Transferred or Resigned
Black, G. V.	26	69	5	0	3	1	104	7	1	0
Champaign-Danville	12	45	1	3	1	0	62	5	1	0
Chicago	336	2092	115	131	82	17†	2773	73	21	10
Eastern Illinois	10	22	0	1	2	0	35	3	1	0
Fox River	7	82	3	2	3	0	97	11	0	0
Gilmer, T. L.	21	34	0	1	2	0	58	1	0	0
Kankakee	6	29	1	1	0	0	37	1	0	0
Knox	5	15	2	0	1	0	23	0	1	0
La Salle	16	44	5	1	2	0	68	3	0	0
McLean	18	39	2	1	0	0	60	2	1	0
Macon-Moultrie	21	46	1	2	1	0	71	0	0	0
Madison	11	66	4	8	1	1	91	3	0	0
Northwest	14	27	3	0	0	0	44	0	1	0
Peoria	24	77	8	3	0	0	112	4	0	0
Rock Island	16	31	5	2	1	0	55	0	0	0
St. Clair	13	63	4	3	3	2	88	1	0	0
Southern Illinois	6	73	6	3	0	0	88	10	1	0
Wabash River	5	23	2	0	1	0	31	11	0	0
Warren	8	5	0	0	0	0	13	0	0	0
Whiteside-Lee	3	19	1	0	0	2	25	0	0	0
Will-Grundy	8	29	0	1	4	0	42	1	0	0
Winnebago	14	47	3	1	0	0	65	1	0	0
Total	600	2977	171	164	107	23	4042	137	29‡	10
Active Members	600	2977	171	164	107	23	4042			
Inactive Members: Non-resident paid	1	1					2			
Inactive Members: Non-resident no fee	10						10			
Inactive Members: Retired, Life	20						20			
Total 1938 Membership	631	2978	171	164	107	23	4074			
Total 1937 Membership	606	2760	91	224	102	18	3801			
1938-37 Comparative Totals	+25	+218	+80	−60	+ 5	+ 5	+273			

*Pursuant to Article IX, Section 1, paragraph 2, of the Constitution and By-Laws, "New graduates are exempt from all dues for the balance of the year of graduation and for the year following graduation the Annual Dues shall be $4.00. (Adopted March, 1934, A. D. A.)"

†16—1938 graduates, 1 transfer from Michigan.

‡One deceased a non-resident member.

• SOCIETY BULLETINS •

G. V. BLACK

On January 12th, the G. V. Black District Dental Society held its regular monthly dinner meeting at the St. Nicholas Hotel in Springfield. The speaker was Dr. R. W. Swanson of Northwestern University Dental School; the subject "Pocket Elimination in Peridontoclasia." The lecture was illustrated with lantern slides and was followed by a moving picture on the subject. This was a very instructive and interesting meeting and was well received by a large and attentive audience. . . . For the meeting on February 9th, fifteen of our own members will present table clinics as has been the custom at this time for several years. These clinics have been very popular in the past and a large attendance is anticipated.

The bunch of Bunches of whom this society is justly proud, recently mentioned in the H & T Column, suggests that this editor remind Bill Schoen that one dental Bunch was omitted; he is another son of papa John R. and a dental supply salesman. . . . In fact this component has various other bunches; for instance the Donelans. First comes the eldest, familiarly and affectionately known in dental circles to young and old alike as "T. P." Then John J. Sr., then James C. and more recently John J. Jr. The meetings of this component which the Donelans do not grace with their presence and smiles are few and far between. . . . Then there are the Lamberts, quite a bunch in their own right. The head of this clan is Alfred, a Springfield dentist for 48 years. His nephew, J. Leslie, a dentist for a lesser number of years, who is the son of the late Dr. Edmund Lambert, one of our respected dental pioneers. The clan shall continue —Les has a son Dale, and a grand chap he is, who last year embarked on his predental course. . . . Then come the O'Hara's, headed by our light weight athlete, George H. The O'Haras have produced a physician and a dentist every other generation from time immemorial. The great-grandfather of our subject was a physician; his grandfather was a pioneer dentist of this community and his father is a physician. . . . Verily, dentistry hath charm!

Your subscriptions to the ILLINOIS DENTAL JOURNAL and the *Journal of the American Dental Association* end with the March issue unless your dues for 1939 are paid by March 1st. Make your remittance to your Component Secretary without delay.

C. N. Newlin, Secretary.

Due to the multiplicity of duties which fall to the lot of the Secretary of a large component such as ours, this Secretary has asked to be relieved of the duties of Component Editor. President McDermott has appointed our capable Past President, Dr. Robert T. Curren and he has graciously accepted the responsibility. Bob has what it takes and we predict a spicy, interesting and entertaining column henceforth. Editor Bob will greet you in the next issue.

So . . . as Component Editor, this is for us . . . Hail and Farewell!

JOHN W. GREEN,
Component Editor.

* * *

CHICAGO

We are glad to report that Dr. Walter Dittmar, who has been seriously ill, is now definitely improved. Dr. Dittmar is at the St. Francis Hospital in Evanston and will more than likely be able to see visitors during the coming week.

A resolution, suitably embossed, will be

presented to the family of the late Dr. C. N. Johnson at one of the General Sessions of the Midwinter Meeting. A special committee composed of Dr. Warren Willman, Chairman, Dr. Franklin D. Clemmer and Dr. Frank Conklin drew up this document and presented it for approval before the body of the Chicago Dental Society at its January meeting, where it was passed unanimously. . . Another special committee, appointed by the Board of Directors, will look into the feasibility of establishing a course for dental assistants in the Junior College system of the Board of Education. That there is need for such training can not be gainsaid, but whether it should be sponsored by the Board of Education or by the Dental schools, might be a matter of debate. . . That sadly unpublicized committee headed by Gus Mueller, the Committee for Enforcement of the Dental Practice Act, has been hard at work against almost unsurmountable odds. No sooner do they get one offender by the scruff of the neck than two others appear. But we'll lay you a litttle bet that Gus will get them down before they get him down.

A new feature of the Midwinter Meeting this year will be the so-called Limited Attendance Clinics conducted by some of the outstanding clinicians of the country. This scheme has been tried before in the East but, as far as we know, this is the first time it has been tried in Chicago. We predict that it will be so popular that no future Midwinter Meeting will be without it. Registration for these events will be necessary and facilities for so doing will be at hand.

Guathological! That word has cropped up again. Some day we're going to take some time off and find out what it means. But it's important enough to warrant the Full Denture and Crown and Bridge Sections combining for a full day's program. The Guathological Society of California, headed by Dr. B. B. McCollum, is putting on the show. Among other things they will present some movies on Mouth Reconstruction. The Oral Surgery Section has always been tops in attendance and will present twelve essayists. This year an attempt will be made to cover subjects of interest to the general practitioner and oral surgeon as well. Those popular fellows from Indianapolis, Drs. Pell and Gregory, will give their illustrated lecture demonstrating the technique for extraction of impacted 3rd molars by using an engine-driven mallet. But before you try it out on your patients we advise you to acquire the jaw-bone of an ass, or some similar mammal, and start hacking away at that to get the necessary experience. The balance of the program deals with some less common but perhaps more involved phases of Oral Surgery and Radiodontics. We deny the coinage of that word, it belongs to Clarence Simpson who, by the way, will be on the program. Of particular interest should be the colored motion pictures of Dr. Arthur Smith on Reconstruction of the Mandible. No less an authority than Carroll Stuart says these pictures really are good. There will be a host of General Clinics dealing with operative dentistry, crown and bridge, economics, orthodontia, oral surgery, ceramics, periodontia and radiodontia. A considerable number of newcomers have been secured and they will try to disprove the old aphorism, "There's nothing new under the sun."

JAMES H. KEITH,
Component Editor.

* * *

EASTERN ILLINOIS

This component editor fell down on reporting the December Study Club Meeting so will have to do double duty this time. . . . Dr. E. J. Rogers of Indianapolis was with us in December. His subject of "Crown and Bridge" was well received. . . . During the dinner hour a short business session was held. Dr. Dixon appointed men from the different sections of our component area to work with the Red Cross on disaster relief. The subject of Christmas Seals was disposed of when our President appointed one member from each town to solicit the dentists in his community for contributions. As yet I do not know the percentage that have made a donation.

At the January meeting, Dr. R. R. Blanchard of Springfield gave a lecture-

clinic on "Full Dentures." During the afternoon session Dr. Blanchard followed his discussion of all the steps in denture construction with a practical clinic on impression and bite taking by using a patient as the demonstrating model. After a steak dinner our essayist gave many excellent pointers on obtaining cooperation from the denture patient. Collection of the fee was considered as an important cooperative item. . . . Two visitors were present, Dr. Quackenbush of Atwood, a member of Macon-Moultrie and Dr. Henry Gresens, recently of Chicago but now located at Toledo. We hope to get Dr. Gresen's transfer soon. . . . We welcome as a new member Dr. L. H. Appel of Casey.

Dentistry must be on the up and up in Mattoon. Your editor was privileged to go through the new home of Dr. Lump. We understand that Dr. Wm. Podesta has also recently completed a new home. . . . During February we will not have a Study Club Meeting as everyone here points to the Chicago Midwinter Meeting—so we will be seeing you at the Stevens.

MELVIN F. LOSSMAN,
Component Editor.

* * *

PEORIA

"The Peoria boys can sure pick good lookers," at least that was the consensus of opinion as the boys looked them over at the January meeting. By them I mean the assistants who were invited to hear Dr. Harry Shafer of Anna, Illinois, speak on Pedodontia. It is true the assistants almost lost out on the dinner due to the fact that they became too interested in practicing at the bar in the University Club. The girls, however, are not to be too severely censured as it is rumored that three of the doctors were giving them financial aid. Some of the wives were also present—did they come to chaperon the assistants or to keep their eyes on their husbands? Several of the boys wanted to sit with the assistants who had a table to themselves, but Sam Ferdinand, the program Chairman, said "No," as he himself had to be at the speakers' table. Sort of a "dog in the manger" attitude. . . . L. H. Johnson, the new full time school dentist, was elected to membership; also L. W. Strong, W. D. Ulrich, and K. J. Watson. . . . D. H. Fraser is with us again being located in Creve Coeur.

Being president of the Kiwanis Club seems to agree with E. E. Hoag. He not only looks well fed but also finds time to lift his voice in song in a local church choir. . . . Guy Sandy is putting on weight. Being president of the Lions Club not only agrees with him but he also finds time to bowl with the club team. These dentists sure are strong on service and how they can take it. . . . At this writing the plans for the Local Talent Meeting in February are practically completed. Starting at 2:30 there will be table clinics followed by a dinner at 6:15. The evening will be given over to lectures and films. Hearsay has it that the committee is somewhat concerned about the films; knowing who's showing them anything may happen. The Committee, Guy L. Sandy, E. V. Stern, and S. S. Ferdinand, assume no responsibility whatsoever.

E. H. MAHLE,
Component Editor.

* * *

SOUTHERN ILLINOIS

With a great deal of sorrow we report the death of the wife of Dr. W. N. McAttee, of Mt. Vernon. After a lingering illness Mrs. McAttee passed away at her home shortly before Christmas. The Southern members wish to express their sincere sympathy to Dr. McAttee. . . . Dr. H. A. Moreland of Cairo spent several days in a local hospital recovering from a severe burn received accidentally in his home during the holidays. . . . Dr. T. W. Ferguson of Marion moved into his newly equipped and ultra-modern office shortly after the new year. Congratulations, Doctor, and every wish for success in your new location. . . . The annual meeting of the Southern Illinois Dental Society will be held on Thursday, March 23, at Herrin, Illinois. All of our friends from the other districts are cordially invited to spend the day with us. . . . Time marches on. A five-year-old boy called a dentist in this district, made an appointment and kept it without the knowledge of his parents. Yet

you hear the remark that dental education doesn't do any good. . . . Dr. M. O. Shelden of Steeleville recently built a new combination home and office. It is a beautiful brick bungalow that the Doctor may well be proud to call his own.

W. E. WAGNER,
Component Editor.

* * *

NORTHWEST

The Northwest District Dental Society meeting was held at Hotel Freeport, January 9th. The guest speaker was Dr. M. M. Federspeil of Milwaukee; his subject, "Surgical Operations of Interest to Dental Practitioners." A fine turnout enjoyed the lecture very much. . . . A new idea, in the form of door prizes was originated last month. Ned Arganbright and O. D. Hill were the fortunate ones. Next meeting they will have to furnish the prizes. Fortunate, did I say? . . . Dr. H. A. Mellinger recently underwent a surgical operation and is recovering nicely. . . . Dr. Diebl of Savanna was reinstated into the society along with Dr. D. S. Wolfe. Glad to have you with us again. . . . All the follows are packing their suit cases preliminary to attending the Chicago meeting. Most of Northwest will be there for the opening session.

ROBERT D. STROHACKER,
Component Editor.

* * *

WILL-GRUNDY

The regular January meeting of the Will-Grundy Component Dental Society was held at the Louis Joliet Hotel, Joliet, Illinois, Thursday, January 12th, 1939. . . . Following the dinner, the new officers elected at the previous meeting assumed their respective offices and duties. . . . Mr. James J. Doody, Superintendent of Industry at the Illinois State Penitentiary, delivered an exceptionally interesting talk on the subject, "Prison Life." . . . During the business session our President, Dr. Brady, read a pamphlet, received from the Southern California State Dental Association, entitled "Dentists' Equity Plan." Some discussion followed, but no action was taken. . . . The President suggested that arrangements be made to have Senator George Gunning, only dentist in the Illinois Senate, as guest speaker for the next meeting. . . . Dr. John J. Devine was elected to membership and Dr. M. A. Vanzara of Coal City was introduced by F. W. Graham, Jr., and presented his application for membership.

EDWARD A. DAINKO,
Secretary-Treasurer.

* * *

WINNEBAGO

The return visit of Dr. Henry Denen of Chicago, who was guest speaker at our last meeting, was as enjoyable as his previous visit to our local society. Harry, by the way, was a great friend of the widely known, late "Shady" Lane of Detroit. In fact, he was telling Charley Helm and myself that his first horse-back riding lesson was given to him by "Shady" during a convention at Atlantic City. On that day, Harry and "Shady," both garbed splendidly in snappy horse-riding vesture, trotted their highly spirited horses along the bridal path beside the beach. Finally, "Shady" suggested that they ride to the water's edge, so turning their mounts to the right, they proceeded toward the ocean. As they approached the water, a man on the beach waved at them frantically. "Shady," thinking they were being greeted, waved back. The next second a large tidal wave caught "Shady" and his horse and carried them about half a block into the ocean. Harry's horse balked, threw him, and ran away, leaving Harry in the path of the wave which soaked him. After "Shady" swam back to shore, he and Harry, both drenched, walked two miles back to the hotel. The horses were later recovered.

During his talk, Dr. Denen presented his own film showing the complete technic for immediate insertion of upper dentures. This film, incidentally, because of its thoroughness and clearness, deserves much credit. For his impression technic, which calls for the use of plaster, he gives credit to his first patients and especially to his home town dentist, who in early days called on his patients with horse and buggy, taking their teeth out in the winter, returning in the spring to take the plaster impression, and still later delivering the

completed denture. Incidentally, this old-time dentist told Harry that he never had any trouble with dentures until public improvements enabled his patients to call at his office. In the horse and buggy days, when it was impracticable for patients to run to the dentist to voice their every whim, the patients learned to master the dentures instead of letting the dentures master them.

At the last meeting, Cyril Sharp made a motion that a committee investigate the price of radio time, and if it is not too steep, that our society inaugurate a weekly "Dental Health" program. Such a move, it was pointed out, would help to combat the unethical tactics of advertising dentists. It was suggested that different members of the local conduct the program each week. This department believes Dr. Sharp's recommendation a splendid one and urges that it be given ample consideration.

LEO J. SMITH,
Component Editor.

* * *

MADISON

This editor is sorry he had no bulletin in the January JOURNAL but will try to make up for it this month. . . . The big news in our component was the Dental Health Institute held on the tenth of January at the Mineral Springs Hotel in Alton. As you know, this meeting is held under the joint sponsorship of the Study Club Committee, the Membership Committee, the Committee on Dental Health Education and the Division of Dental Health Education of the State Department of Public Health. Fifty-five men attended the afternoon session and if we could have kept up the good work during the evening we would have set a record, but due to circumstances beyond our control we were unable to get full cooperation of the Parent-Teacher associations in this area. . . . Two men in our component would like to take the examination to enable them to call themselves specialists in Orthodontia but a very peculiar wording of the Illinois law governing specialists has discouraged them. It seems one has to practice as a specialist for five years before he can take the examination to become one. . . . Being secretary as well as Component Editor in this district, let me take this opportunity to voice my feeble protest to the dues increase of the American Dental Association for next year. A fifty per cent increase in dues to the A. D. A. seems too high, and members around here are uttering dire threats. . . . Dr. Brandhorst of Alton must have taken Dr. Shaffer's talk at the Dental Health Institute to heart because he has since equipped a very attractive playroom for children. . . . Madison County is just emerging from the worst ice storm it has had in years.

Out of the Office: Ed Gallagher building a Ping-Pong table. . . . Jim Mahoney and his Rotary Club. . . . Harry Dickinson and his game of Snooker. . . . new cars by Dick Hopkins and Chas. Hemphill (probably others I have not heard of). . . . Walt Emons in the middle of a heated political discussion at noon. . . . Ralph Dickson also has a new car. . . . Jim Coleman at the fights on Friday night.

It looks like the program for our Annual Meeting will consist of papers on Full Dentures and Exodontia if the Executive Council follows the desires shown on the returned cards. Don't forget our meeting will be held in Collinsville this year.

G. A. SMITH,
Component Editor.

* * *

QUINCY STUDY CLUB

The Quincy Study Club held their regular monthly meeting on January 10, 1939. Dr. Walter Stevenson, a local M. D., did a splendid job of pinch hitting for our scheduled essayist, Dr. Ben Freidman who, we were sorry to hear, was confined to a Chicago hospital. Dr. Stevenson gave us a splendid account of his recent trip to India. His story was well illustrated with views of living conditions, habits, dances, etc., of the natives. Later in the day Dr. Stevenson held the attention of the club with a color film of a surgical operation depicting the removal of a cataract from the eye. . . . 34 members were in attendance and Ralph Thesen served as chairman. . . . The club agreed to give a group

clinic at the State Meeting in Peoria next May and selected L. H. Wolfe to act as leader and complete the details.

JESSE F. KEENEY,
Secretary.

* * *

HISTORIC MATERIAL WANTED FOR DIAMOND JUBILEE

Any member of the Illinois State Dental Society having material that is representative of the historical or scientific development of our Society and who would care to exhibit it at the Diamond Jubilee Meeting in Peoria, May 8, 9, 10, 11, 1939, please contact Dr. J. M. Elson, Chairman of Scientific Exhibits, 627 Jefferson Bldg., Peoria, Illinois.

* * *

NORTHWESTERN UNIVERSITY DENTAL SCHOOL ALUMNI ASSOCIATION

The annual luncheon of the Alumni Association of Northwestern University Dental School will be held during the Midwinter Meeting of the Chicago Dental Society. The Grand Ballroom of the Stevens Hotel has been reserved for 12 noon on Wednesday, February 15th.

GEORGE W. TEUSCHER,
President.

THE PHYSIOLOGY OF THE PERIODONTAL MEMBRANE

(*Concluded from page* 69)

duces a simple shear, i.e. one point of contact which is also a moving point. It is through the application of this principle that the greatest amount of work can be accomplished with the minimum amount of power. The same principle of having a very small portion of the total occlusal contact area of the tooth in function at any given instant also explains why the chisels of the rodent denture are so efficient with such a delicate supporting tissue. When we have correct contours to the occlusal surfaces and normal occlusal relationship, we see that the principle of the shear is made use of in the bicuspid and molar regions of the human denture. Hence we have several shears working at the same time on each tooth. However, if we do not have the correct curvature to all occlusal planes, but instead have flattened areas on these surfaces, then we have occlusal contact areas in place of the normal occlusal contact points. The shear is efficient only when the blades have one point contact. When the scissor is dull, or has a contact area, an increase in power is required to accomplish a given amount of work. The same holds true regarding the human denture. When flat spots develop in the enamel due to occlusal wear or when restorations are placed which have flat, inclined planes in place of curved surfaces, then an increase in power is required to accomplish the work of mastication which in turn places an additional strain on the supporting tissues. It is essential that restorations be contoured so as to increase the efficiency of our shears. When they are contoured so as to produce occlusal contact planes in lieu of occlusal contact points the effectiveness of the shear is reduced with the attending injury to the parodontium as soon as the biologic limitations of the tissue have been exceeded. It is necessary for us to increase our knowledge of the physiology of the dentures and the supporting tissues if we desire to understand many of the lesions of the supporting structures. The placing of a simple occlusal amalgam filling then becomes a very delicate and particular operation not to speak of the much more complicated proximo-occlusal restoration which involves proximal contour and contacts as well as occlusal contacts.

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• OBITUARIES •

JAMES M. SNOW
1870-1938

On Tuesday, December 5th, pneumonia claimed as its victim, quiet, mannerly, courteous James M. Snow of Oak Park, Illinois.

Doctor Snow was born August 29, 1870. He graduated from Northwestern University Dental School in 1898 and practiced in the Chicago "loop" for forty years. In 1905 he became a member of the Illinois State Dental Society through the Chicago component, and in 1930 became a Life Member. Doctor Snow was devoted both to his profession and to his church, the Calvary Presbyterian, of which he was an elder. Burial took place Thursday, December 8th. He is survived by his widow and one son.

HUGH S. HENDERSON
1874-1938

Hugh S. Henderson died in St. Francis Hospital, Evanston, Illinois, November 24th. Doctor Henderson was born in Green Lake County, Minnesota, June 18, 1874. In 1898 he received his dental degree from the University of Minnesota and began practicing on the South Side of Chicago. In 1904 he moved his office to the "loop" and has maintained offices there since that time. Doctor Henderson held membership in the Illinois State Dental Society through the Chicago component from 1905 to 1914, and from 1918 to 1938 inclusive. He was a member of Delta Sigma Delta Fraternity and of the Odontographic Society of Chicago. Doctor Henderson is survived by his widow, one sister and one brother.

FRANCIS M. CARL
1859-1938

Dr. Francis M. Carl, a practicing dentist in Freeport for the past 36 years, was found dead in his office Christmas morning. His death is thought to have resulted from a heart attack, as he had suffered from a heart ailment for the past several years. Funeral services were held at the Walker mortuary in Freeport and interment was at Oakland Cemetery. Members of the Stephenson County Dental Society, of which he had been a member, acted as pall bearers.

Francis M. Carl was born in Cedarville, December 9, 1859. He attended local schools and later entered the Chicago College of Dental Surgery, graduating from that institution in 1902. Since that time he had been engaged in the practice of his profession here. He became a member of the Illinois State Dental Society in 1905 and retained his membership until 1930 inclusive except for 1912. Dr. Carl's marriage to Miss Catherine Bennethum took place in 1890. Surviving is one daughter, Mrs. B. M. Hermsmeier, one sister, Miss Alice Carl, who is now in Florida, and two grandsons, William and Jack Healy.

WILLIAM T. BELL
1868-1938

Dr. William T. Bell of Chatsworth, Illinois succumbed to a heart attack November 29, 1938. He had been in poor health for some time but had conducted his dental practice until his death.

Dr. Bell was a native of Ontario, Canada and attended the Toronto Dental School, later graduating from the Chicago College of Dental Surgery in 1896. He practiced in Watseka, Illinois until 1908 when he moved to Chatsworth. He was highly esteemed in this community for his professional and civic services, having served as a village trustee for four years and as a member of the public library board for fourteen years. Dr. Bell was a member of the Knights of Pythias, Masonic and Modern Woodmen fraternal orders and a life member of the Illinois State Dental Society. He is survived by his wife, a daughter, Mrs. Virginia Taylor and a step-sister.

MIDWINTER MEETING

CHICAGO DENTAL SOCIETY

FEBRUARY 13-16, 1939

STEVENS HOTEL

The Chicago Dental Society extends to all members of the Illinois State Dental Society a most cordial invitation to attend the 75th Annual Midwinter Meeting to be held at the Stevens Hotel, Chicago, February 13-16, 1939.

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Although dentists will attend from all parts of the country, the Midwinter Meeting has always had a special interest to Illinois dentists because it reflects the progress and efforts made by the practitioners of the state. For this reason the invitation to attend the meeting this year is most heartily and sincerely renewed.

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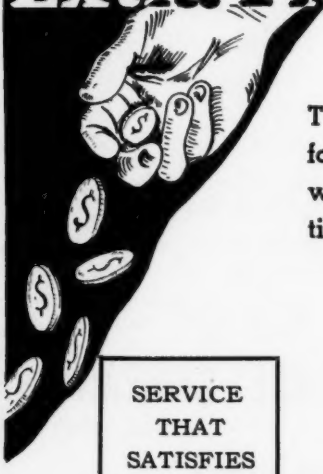

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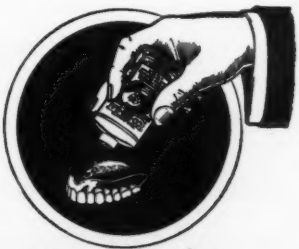

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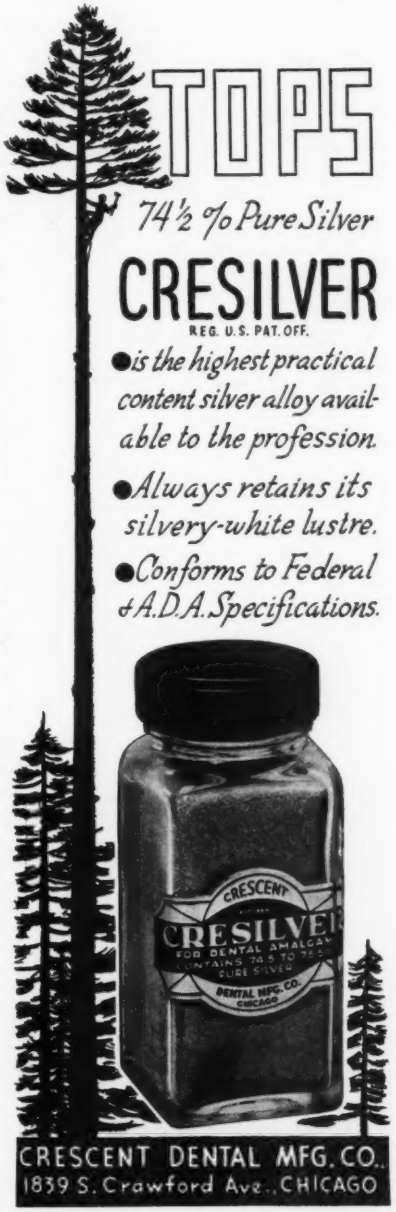

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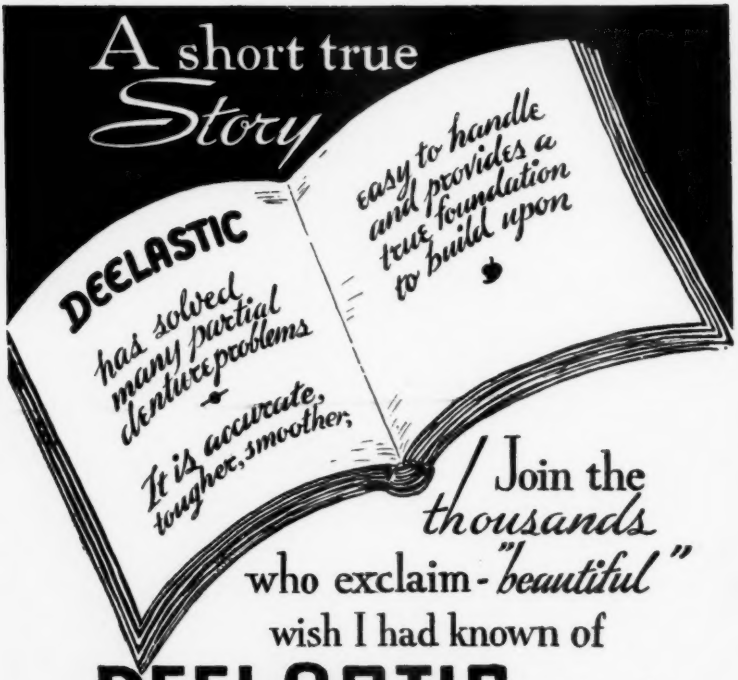
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